

HITACHI

SERVICE MANUAL

NTSC

AP62 Chassis

PA

No. 0084

50FX30B
60FX32B

R/C: CLU-434VP
CLU-951MP

This addendum gives differences between 50FX30B/60FX32B and the 50FX18B. For any other information, see the 50FX18B Service Manual PA No. 0070 issued in July 1996.

CAUTION: Before servicing this chassis, it is important that the service technician read the "Safety Precaution" and "Product Safety Notices" in Service Manual PA No. 0070.

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health and Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale smoke or fumes produced.

REPLACEMENT PARTS LIST

This parts list only gives parts which are different from the 50FX18B.

SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
4	NA11702	Lens CRT Metal-60"	47	32110042	Speaker Grille Ass'y-60"
13	KS00163	Mirror-60"	55	H420673	Mirror Metal A-50"
22	QD04111	Back Cover-60"	55	NA11681	Mirror Metal A-60"
27	NT00464	Screen Frame Ass'y-60"	56	NA11691	Mirror Metal B-60"
 31	KQ00166K	CPC Lens Ass'y (RG)-60"	 E12	BY00441	DY-V80-6.7SS(3.00)-50"
 32	KQ00166K	CPC Lens Ass'y (RG)-60"	 E12	BY00442	DY-V80-6.7SS(3.00)-60"
 33	KQ00161K	CPC Lens Ass'y (B)-60"	E301	HL00731	Remote Control CLU-434VP
34	QG00831	Rear Cover Ass'y-60"	N201	QR21021	Instruction Book
 40	UE02684	Lens CRT Block Ass'y(R)-50"	V1R	DE00824	P16LGD00RFA
 40	UE03481	Lens CRT Block Ass'y(R)-60"	V1G	DE00825	P16LGD00HLA
 41	UE02685	Lens CRT Block Ass'y(G)-50"	V1B	DE00826	P16LGD00BMB
 41	UE03482	Lens CRT Block Ass'y(G)-60"		H512221	Lower Rear Board-50"
 42	UE02686	Lens CRT Block Ass'y(B)-50"		H512227	Lower Rear Board-60"
 42	UE03483	Lens CRT Block Ass'y(B)-60"		UE02543	Lens CRT Chassis B. Ass'y-50"
45	KR00273	Screen Ass'y-60"		UE02545	Lens CRT Chassis B. Ass'y-60"
47	32110038	Speaker Grille Ass'y-50"		H310355	Digital Conv. Jig Screen-60"

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

PROJECTION COLOR TELEVISION

April 1997

HHEA-MANUFACTURING DIVISION

Due to the addition of the 60FX32B, some adjustment procedure specifications must be updated. Specifically, when adjusting Focus, Raster Position, Vertical/Horizontal Size, and Blue Defocus. Refer to the below tables for the latest adjustment specifications, according to their corresponding adjustment procedure, found in the AP62 Service Manual PA NO. 0070.

2.1 Focus Adjustment

(5)

Set Size	Pitch between L
50 "	3.0 cross-hatch pitches
60 "	3.0 cross-hatch pitches

(6)

Set Size	Pitch between L
50 "	3.0 cross-hatch pitches
60 "	3.0 cross-hatch pitches

(7)

Set Size	Pitch between L
50 "	3.0 cross-hatch pitches
60 "	3.0 cross-hatch pitches

2.8 Raster Position Adjustment

(1)

Size	Vert. Line	Side of Green
50 "	Red ℓ_1	7mm Left
50 "	Blue ℓ_2	42mm Left
60 "	Red ℓ_1	0mm Left
60 "	Blue ℓ_2	40mm Right

2.9 Vertical Size Adjustment (R612)

(3)

Size	ℓ
50 "	650+/-5mm
60 "	770+/-5mm

2.10 Horizontal Size Adjustment (R649)

(2)

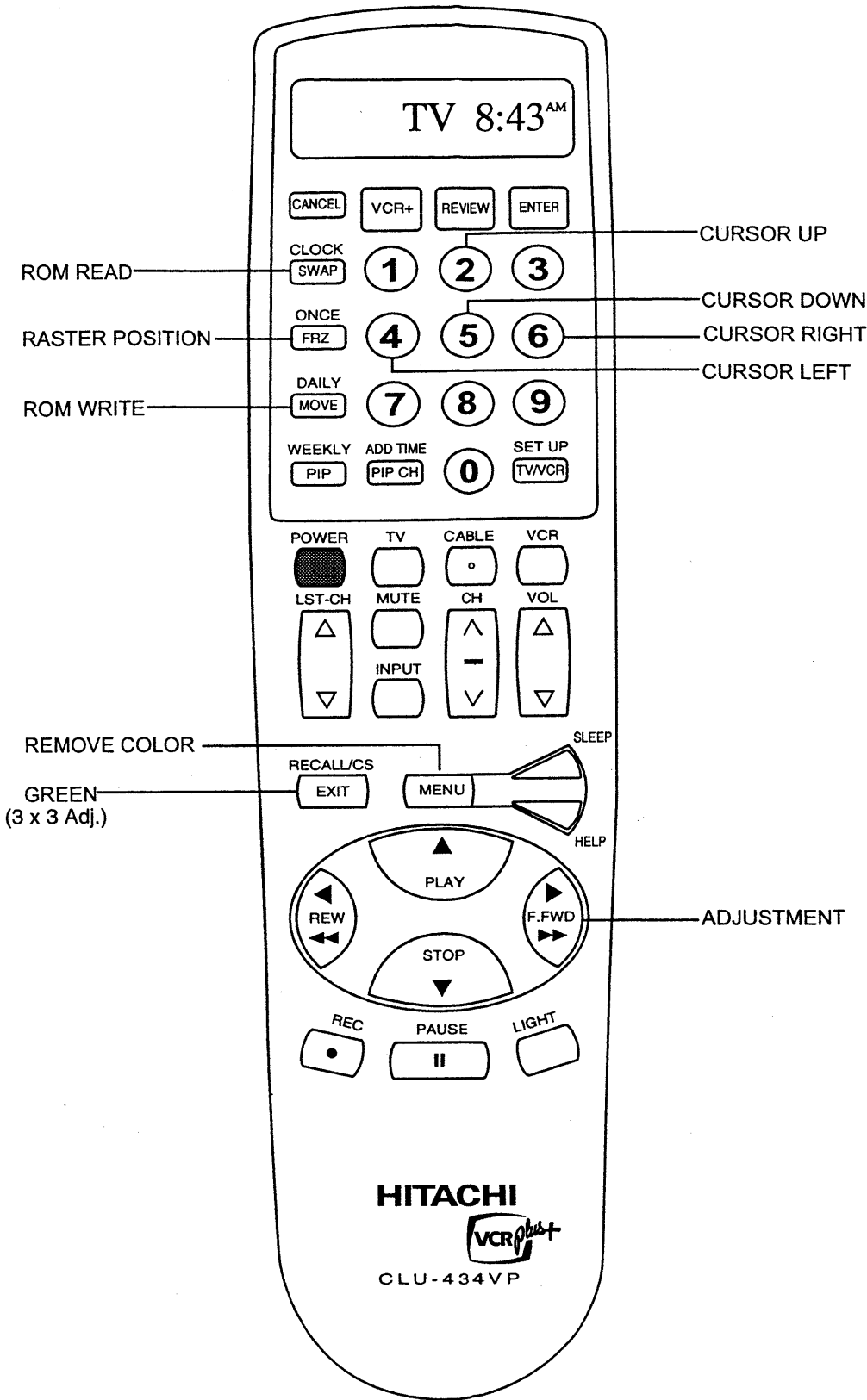
Size	ℓ
50 "	950+/-5mm
60 "	1140+/-5mm

2.14 Blue Defocus Adjustment

(5)

Defocus Brightness Specification	
Screen Size	Brightness of Blue
50 "	37 cd/m ²
60 "	- - -

Defocus Sticking Out Specification	
Screen Size	Blue Sticking Out
50 "	1.0mm
60 "	1.0mm



NOTE: 50FX30B and 60FX32B models use a new Remote Control. Digital Convergence Adjustment procedures described in AP62 Service Manual PA No. 0070 were described for use with a CLU-951MP remote. It is not possible to make Phase Adjustment or perform Calculation using the CLU-434VP remote control. If these adjustments are necessary, please use the CLU-951MP remote.

HITACHI

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SERVICE MANUAL

NTSC

AP62 Chassis

PA

No. 0070

50FX18B
50FX19K
55FX20B

R/C: CLU-417UI

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CAUTION: Before servicing this chassis, it is important that the service technician read the "Safety Precaution" and "Product Safety Notices" in this Service Manual.

SAFETY NOTICE

USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by a Δ on the schematics and on the parts list in this Service Data and its supplements and bulletins. Before servicing the chassis, it is important that the service technician read and follow the "Safety Precautions" and "Product Safety Notices" in this Service Manual.

*For continued x-radiation protection, replace picture tube with original type of Hitachi approved equivalent type.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

PROJECTION COLOR TELEVISION

July 1996 HHEA - MANUFACTURING DIVISION

SAFETY PRECAUTIONS

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Improperly performed repairs can adversely affect the safety and reliability of the product and may void warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

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When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with solder. Also, when soldering do not inhale any smoke or fumes produced.

This television receiver provides display of television closed captioning in accordance with section 5.119 of the FCC rules.

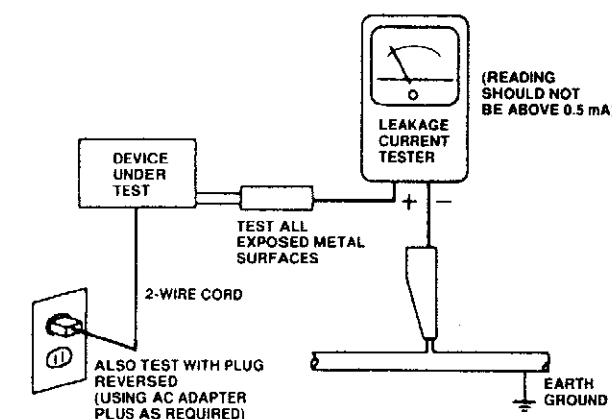
1. Before returning an instrument to the customer, always make a safety check of the entire instrument, including but not limited to the following items:

- a. Be sure that no built-in protective devices are defective and/or have been deleted during servicing.
 - (1) Protective shields are provided on this chassis to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience.
 - (2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including but not limited to, nonmetallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. **Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damage.**

- b. Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to (1) spacing between the picture tube and cabinet mask, (2) excessively wide cabinet ventilation slots, and (3) an improperly fitted and/or incorrectly secured cabinet back cover.

- c. **Antenna Cold Check** — With the instrument AC plug removed from any AC source, connect an electrical jumper across the two AC plug prongs. Place the instrument AC switch in the on position. Connect one lead of an ohmmeter to the AC plug prongs tied together and touch the other ohmmeter lead in turn to each tuner antenna input exposed terminal screw and, if applicable, to the coaxial connector. If the measured resistance is less than 1.0 megohms or greater than 5.2 megohms, an abnormality exists that must be corrected before the instrument is returned to the customer. Repeat this test with the instrument AC switch in the off position.

- d. **Leakage Current Hot Check** — With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) C101.0 Leakage Current for Appliances and Underwriters Laboratories (UL) 1410, (50.7). With the instrument AC switch first in the on position and then in the off position, measure from a known earth ground (metal waterpipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle bracket, metal cabinet, screw heads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.1 milliamperes. Reverse the instrument power cord plug in the outlet and repeat test.

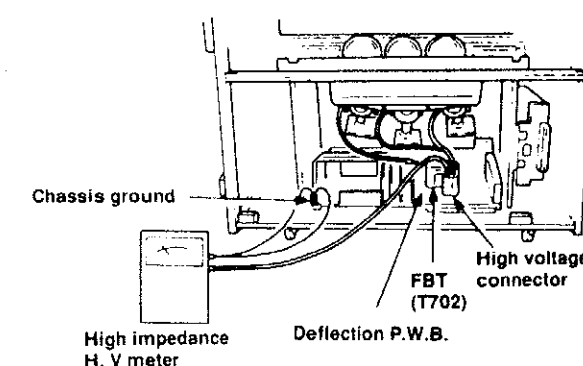


AC Leakage Test

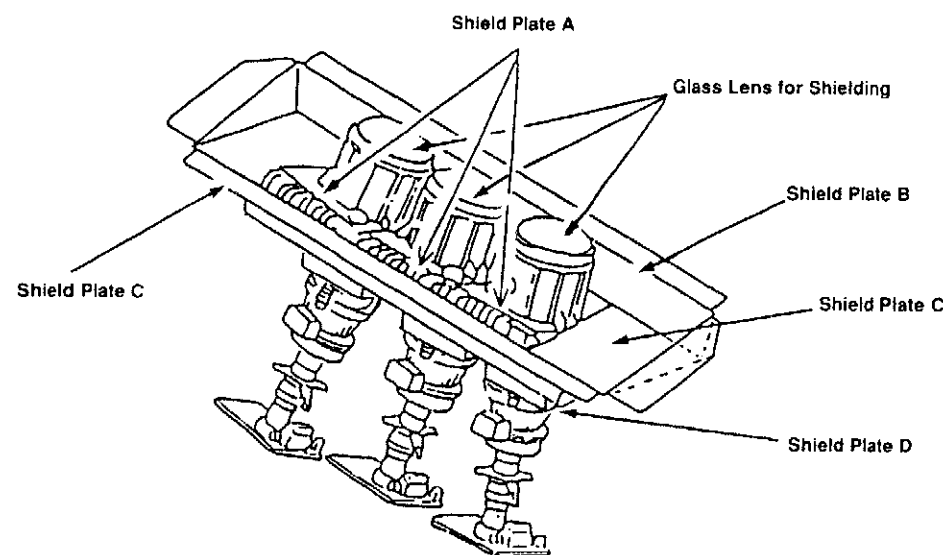
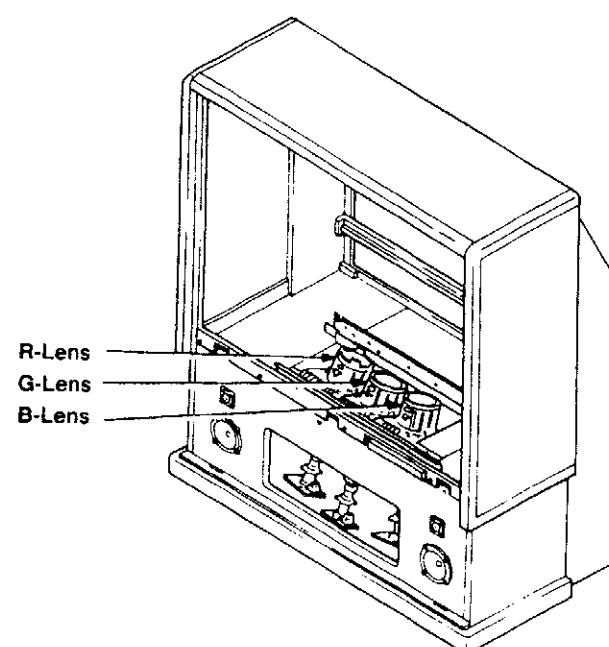
ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER OR BEFORE CONNECTING THE ANTENNA OR ACCESSORIES.

- e. **High Voltage** — This receiver is provided with a hold down circuit for clearly indicating that voltage has increased in excess of a predetermined value. Comply with all notes described in this Service Manual regarding this hold down circuit when servicing, so that this hold down circuit may correctly be operated.
- f. **Serviceman Warning** — With minimum contrast and brightness, operating high voltage in this receiver is lower than **31.6kV**. In case any component having influence on high voltage is replaced, confirm that high voltage with minimum contrast and brightness is lower than **31.6kV**. To measure H.V. use a high impedance H.V. meter. Connect (-) to chassis earth and (+) to the CRT anode button. (See the following connection diagram.)

Note: Turn power switch off without fail before the connection to the anode button is made.



- g. **X-radiation — TUBE:** The primary source of X radiation in this receiver is the picture tube. The tube utilized for the above mentioned function in this chassis is specially constructed to limit X radiation emissions. For continued X radiation protection, the replacement tube must be the same type as the original, HITACHI approved type. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, avoid being unnecessarily close to the picture tube and the high voltage component. Do not operate the chassis longer than is necessary to locate the cause of excessive voltage.



Detailing X-radiation shield.
Fig. 1

h. X-Radiation Shield —

- 1) This receiver is provided X-ray shield plates for the protection of X-radiation. Do not remove X-ray shield plates A, B, C, or D shown in Fig. 1 unnecessarily, when troubleshooting and/or making test measurements.
- 2) To prevent X-radiation, after replacement of picture tube and lens, confirm these components to be fixed correctly to bracket and cabinet, and not to be taken off easily.

2. Read and comply with all caution and safety-related notes on or inside the receiver cabinet, on the receiver chassis, or on the picture tube.

3. **Design Alteration Warning** — Do not alter or add to the mechanical or electrical design of this TV receiver. Design alterations and additions, including but not limited to, circuit modifications and the addition of items such as auxiliary audio and/or video output connectors, might alter the safety characteristics of this receiver and create a hazard to the user. Any design alterations or additions may void the manufacturer's warranty and may make you, the servicer, responsible for personal injury or property damage resulting therefrom.

4. **Picture Tube Implosion Protection Warning** — The picture tube in this receiver employs integral implosion protection. For continued implosion protection, replace the picture tube only with one of the same type number. Do not remove, install, or otherwise handle the picture tube in any manner without first putting on shatterproof goggles equipped with side shields. People not so equipped must be kept safely away while picture tubes are handled. Keep the picture tube away from your body. Do not handle the picture tube by its neck.

5. **Hot Chassis Warning** — a. Some TV receiver chassis are electrically connected directly to one conductor of the AC power cord and may be safely serviced without an isolation transformer only if the AC power plug is inserted so that the chassis is connected to the ground side of the AC power source. To confirm that the AC power plug is inserted correctly, with an AC voltmeter measure between the chassis and a known earth ground. If a voltage reading in excess of 1.0V is obtained, remove and reinsert the AC power plug in the opposite polarity and again measure the voltage potential between the chassis and a known earth ground. b. Some TV receiver chassis normally have 85V AC (RMS) between chassis and earth ground regardless of the AC plug polarity. These chassis can be safely serviced only with an isolation transformer inserted in the power line between the receiver and the AC power source, for both personnel and test equipment protection. c. Some TV receiver chassis have a secondary ground system in addition to the main chassis ground. This secondary ground system is not isolated from the AC power line. The two ground systems are electrically separated by insulating material that must not be defeated or altered.

6. Observe original lead dress. Take extra care to assure correct lead dress in the following areas: a. near sharp edges, b. near thermally hot parts — be sure that leads and components do not touch thermally hot parts, c. the AC supply, d. high voltage and e. antenna wiring. Always inspect in all areas for pinched, out-of-plate, or frayed wiring. Do not change spacing between components, and between components and the printed circuit board. Check AC power cord for damage.
7. Components, parts, and/or wiring that appear to have overheated or are otherwise damaged should be replaced with components, parts, or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

8. **PRODUCT SAFETY NOTICE** — Many TV electrical and mechanical parts have special safety-related characteristics some of which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified Hitachi service data by shading on schematics and by a (⚠) in the parts list. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part in Hitachi service data parts list might create shock, fire, and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate. For the latest information, always consult the appropriate current Hitachi service literature. A subscription to, or additional copies of Service literature may be obtained at a nominal charge from Hitachi.

SERVICING PRECAUTIONS

CAUTION: Before servicing instruments covered by this service data and its supplements and addenda, read and follow the SAFETY PRECAUTIONS on page 3 of this publication.

NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

General Servicing Guidelines

1. Always unplug the instrument AC power cord from the AC power source before:
 - a. Removing or reinstalling any component, circuit board, module, or any other instrument assembly.
 - b. Disconnecting or reconnecting any instrument electrical plug or other electrical connection.
 - c. Connecting a test substitute in parallel with an electrolytic capacitor in the instrument.

Caution: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
2. Discharging the picture tube anode.
3. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc.) equipped with a suitable high voltage probe. Do not test high voltage by "drawing an arc." The H.V. Distribution Box has an internal 400M Ω resistor (bleeder resistor) connected from the high voltage to ground. After power is removed from the instrument the high voltage will discharge through the high voltage bleeder resistor. If the tubes have high voltage after power is removed, then the bleeder resistor is defective or the bleeder ground is disconnected.
4. Discharge the picture tube's anode at any of the R, G, or B outputs on the High Voltage distribution box only by (a) first connecting one end of an insulated clip lead to the degaussing or kine aquadag grounding system shield at the point where the picture tube socket ground lead is connected, and then (b) touch the other end of the insulated clip lead to the picture tube high voltage distribution box R, G, or B output, using an insulating handle to avoid personal contact with high voltage.
5. Do not spray chemical on or near this instrument or any of its assemblies.
6. Unless specified otherwise in these service data, clean electrical contacts by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable nonabrasive applicator: 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength). **Caution:** This is a flammable mixture. Unless specified otherwise in these service data, lubrication of contacts is not required.
7. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service data might be equipped.

7. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
8. Always connect the test instrument ground lead to the appropriate instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.
9. Use with this instrument only the test fixtures specified in this service data.

CAUTION: Do not connect the test fixture ground strap to any heatsink in this instrument.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material.)
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

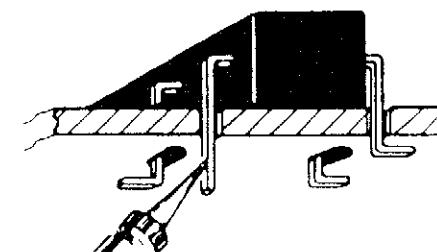
1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range 500°F to 600°F.
2. Use an appropriate gauge of resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a small wire-bristle (0.5 inch or 1.25 cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique.
 - a. Allow the soldering iron tip to reach normal temperature (500°F to 600°F).
 - b. Heat the component lead until the solder melts. Quickly draw away the melted solder with an anti-static, suction-type solder removal device or with solder braid.

CAUTION: Work quickly to avoid overheating the circuit board printed foil.

6. Use the following soldering technique.
 - a. Allow the soldering iron tip to reach normal temperature (500°F to 600°F).
 - b. First, hold the soldering iron tip and solder strand against the component lead until the solder melts.
 - c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.

CAUTION: Work quickly to avoid overheating the circuit board printed foil or components.

- d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.



Use Soldering Iron to Pry Leads

IC Removal/Replacement

Some Hitachi unitized chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas.)

"Small-signal" Discrete Transistor Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact, then solder each connection.

Power Output Transistor Devices Removal/Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heatsink mounting screw (if so equipped).
3. Carefully remove the transistor from the circuit board.
4. Insert new transistor in circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heatsink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicularly to the circuit board.
3. Observing diode polarity, wrap each lead out of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and, if necessary, apply additional solder.

Fuses and Conventional Resistor Removal/Replacement

1. Clip each fuse or resistor lead at top of circuit board hollow stake.
2. Securely crimp leads of replacement component around stake 1/8 inch from top.
3. Solder the connections.

CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board, to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board, causing the foil to separate from, or "lift-off," the board. The following guidelines and procedures should be followed whenever this condition is encountered.

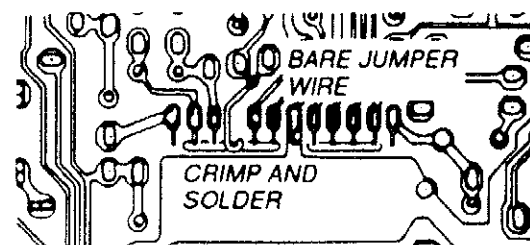
In Critical Copper Pattern Areas

High component/copper pattern density and/or special volt-ampere characteristics make the spacing and integrity of copper pattern in some circuit board areas more critical than in others. The circuit foil in these areas is designated as Critical Copper Pattern and is identified and illustrated in this service data in the section titled Safety Related Copper Pattern (see data in the section titled Safety Related Copper Pattern (see table of contents for page number). Because Critical Copper Pattern requires special soldering techniques to ensure the maintenance of reliability and safety standards, contact your Hitachi personnel.

At IC Connections

To repair defective copper pattern at IC connections, use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections.)

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary.)
2. Carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.



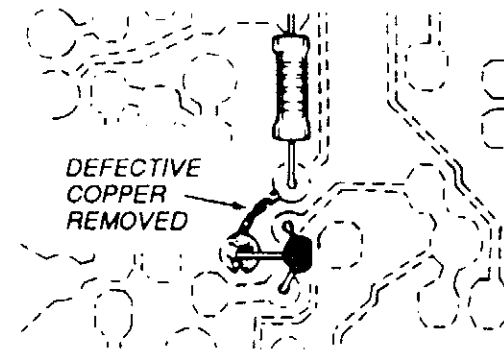
Install Jumper Wire and Solder

3. Bend a small "U" in one end of a small-gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.

4. Route the jumper wire along the path of the cut-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area, and clip off any excess jumper wire.

At Other connections

Use the following technique to repair defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.



Insulated Jumper Wire

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side. Carefully crimp and solder the connections.

CAUTION: Be sure the insulated jumper wire is dressed so that it does not touch components or sharp edges.

Frequency Synthesis (FS) Tuning Systems

1. Always unplug the instrument AC power cord before disconnecting or reconnecting FS tuning system cables and before removing or inserting FS tuning system modules.
2. The FS tuner must never be disconnected from the FS tuning control module while power is applied to the instrument.
3. When troubleshooting intermittent problems that might be caused by defective cable connection(s) to the FS tuning system, remove the instrument AC power as soon as the defective connector is found and finish confirming the bad connection with a continuity test. This procedure will reduce the probability of electrical overstress of the FS system semi-conductor components.

TECHNICAL CAUTIONS

High Voltage limiter circuit operation check.

1. Turn off TV and connect jig as shown in Figure 2. Adjust jig fully counter-clockwise for minimum resistance.
2. Set the AC input to 120V AC and turn on TV.
3. Confirm test pattern on CRT is a usable picture, then slowly adjust jig until the picture disappears and TV shuts down.

4. When the limiter circuit is operating properly, High Voltage will be less than 37.0kV at 0.6mA when TV shuts down.
5. Turn off set immediately after checking circuit operation.
6. Unplug set for one minute to reset shutdown circuit. Remove jig and voltmeter.

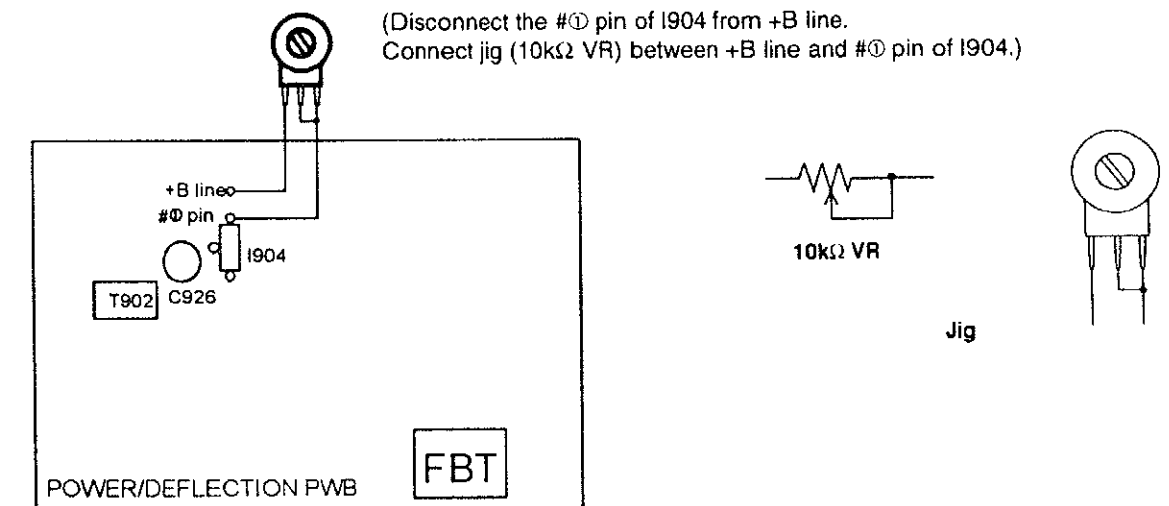
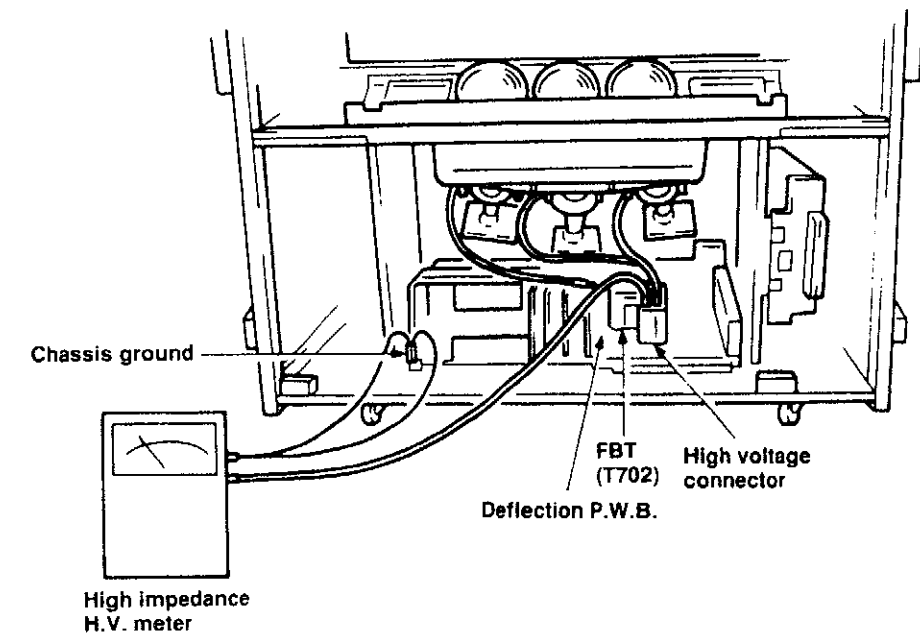


Fig. 2 Deflection/Power Supply P.C.B.

50FX18B
50FX19K
55FX20B

50FX18B
50FX19K
55FX20B

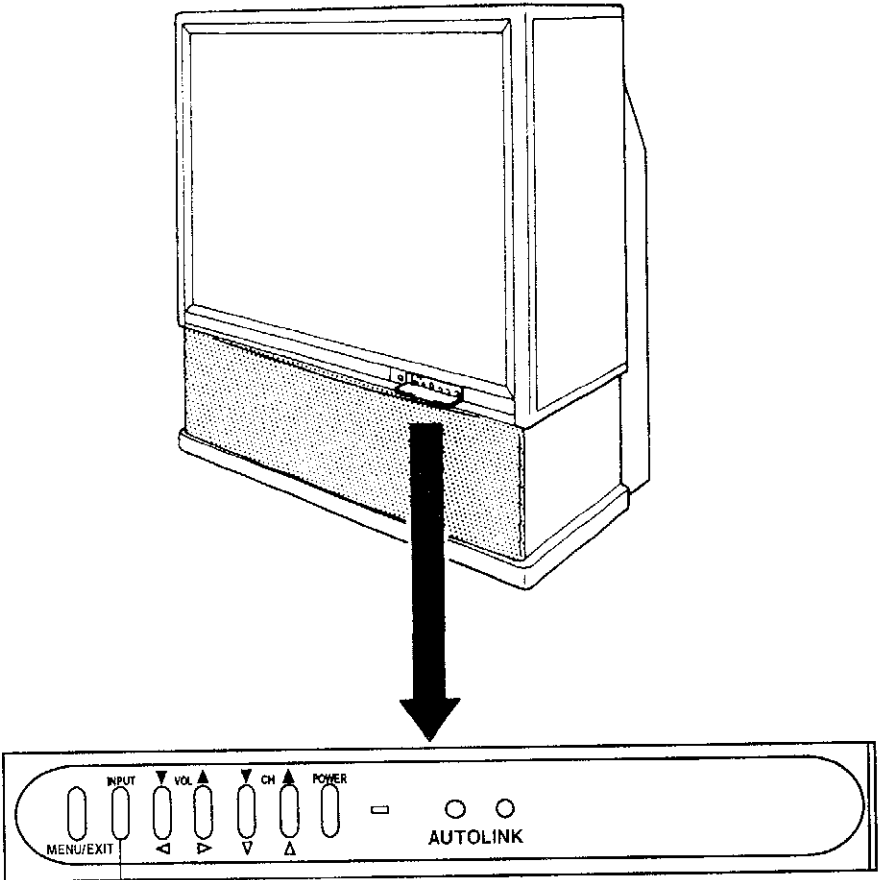
SPECIFICATIONS

Model:	50FX18B 55FX20B	50FX19K	Anode Voltage:	30.0 kV (Zero Beam Current)
Cathode-Ray Tube:	90° deflection 7.0 inch 180DLB22R 180DLB22G 180DLB22B		Brightness:	390 ft-Nominal - (50FX18B/19K) 320 ft-Nominal - (55FX20B) (Peak White)
Power Input:	120 volts AC, 60Hz		Speakers:	2 Woofers - 6 inch (16 cm) round
Power Consumption:	216 watts - Maximum 163 watts - Operating		Dimension:	50FX18B/19K 55FX20B
Antenna Impedance:	75 ohm Unbalanced VHF/UHF/CATV		Height (in.)	51-13/16 54-9/16
Receiving Channel:	VHF EXT. Mid CATV Mid CATV Super CATV Hyper	CH 2-13 (A-2)-(A-1), 4* A-I J-W (W+29)-(W+53)	Width (in.)	43-3/16 47-1/8
Intermediate Frequency:	Picture I-F Carrier 45.75 MHz Sound I-F Carrier 41.25 MHz Color Sub Carrier 42.17 MHz		Depth (in.)	23-1/8 26-9/16
Video Input:	1 Volt-p 75 ohm		Weight (lbs.)	230 267
Video Output:	1 Volt-p 75 ohm		Circuit Board Assemblies:	CPT (B) P.C.B. CPT (G) P.C.B. CPT (R) P.C.B. 3 Line Comb. P.C.B. Signal P.C.B. Signal Sub P.C.B. Power/Deflection P.C.B. Control P.C.B. Terminal P.C.B. V.M. P.C.B. Speaker Terminal P.C.B.
Audio Input:	0.47 volt rms, 47 k ohm			
Stereo Audio Output:	0.47 volt rms, 1 k ohm			
Audio Output Power:	Front — 7 watts rms per channel, 8 ohm impedance. Rear — 3 watts per channel, 8 ohm impedance.			

CIRCUIT PROTECTION

Fuse (or Device)	Circuit Protected	Physical Location
F902 5A/125V AC	Main Fuse	Power/Defl. Circuit Board
F903 5A/125V DC (LITTELFUSE)	Main Fuse	Power/Defl. Circuit Board
F905 4A/125V DC (LITTELFUSE)	26V Supply (Audio)	Power/Defl. Circuit Board
F906 1.6A/125V DC	115V (+B) Supply	Power/Defl. Circuit Board

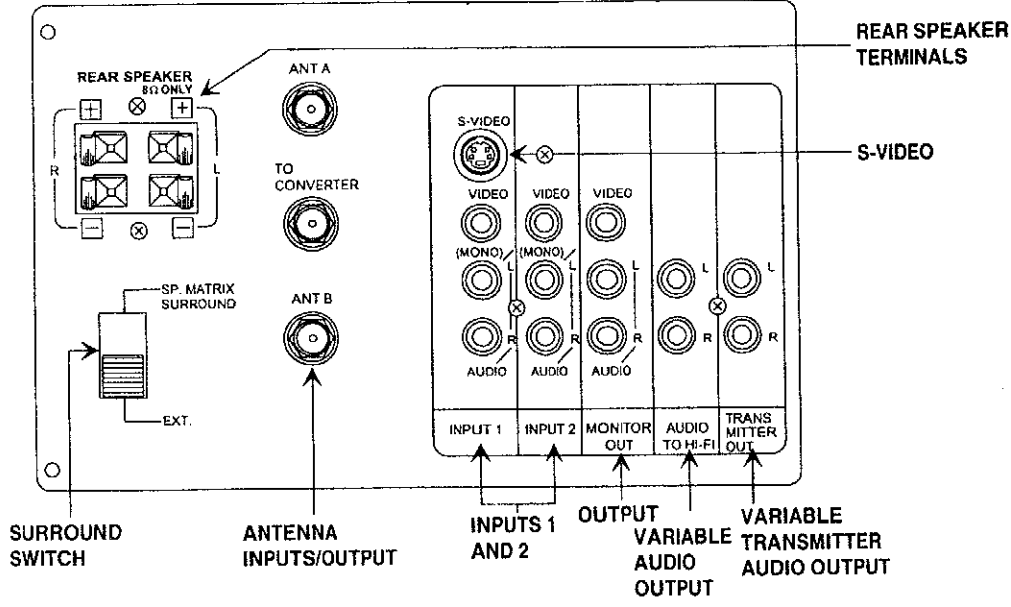
GENERAL INFORMATION



TV/VIDEO SOURCE SELECTOR

Control Panel
Fig. 3

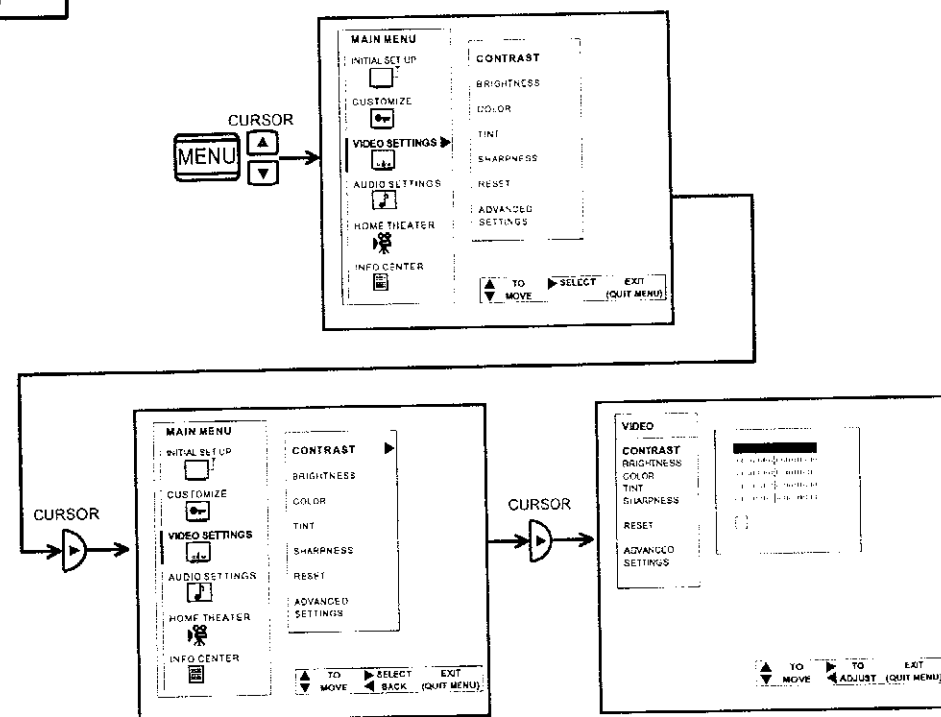
REAR SPEAKER TERMINALS



Rear Connections Panel
Fig. 4

VIDEO SETTINGS

Select VIDEO SETTINGS to adjust picture settings and improve picture quality.



Use the CURSOR ▲ or ▼ to highlight the function to be adjusted.
Press CURSOR ◀ or ▶ to adjust the function.
Use CURSOR ▲ or ▼ to highlight RESET or ADVANCED SETTINGS, then CURSOR ◀ to return to previous menu.
Press EXIT to quit menu.

CONTRAST

Use this function to change the contrast between black and white levels in the picture. This adjustment will only affect the picture when PICTURE SETTINGS AI is OFF.

BRIGHTNESS

Use this function to adjust overall picture brightness.

COLOR

Use this function to adjust the level of color in the picture.

TINT

Use this function to adjust flesh tones so they appear natural.

SHARPNESS

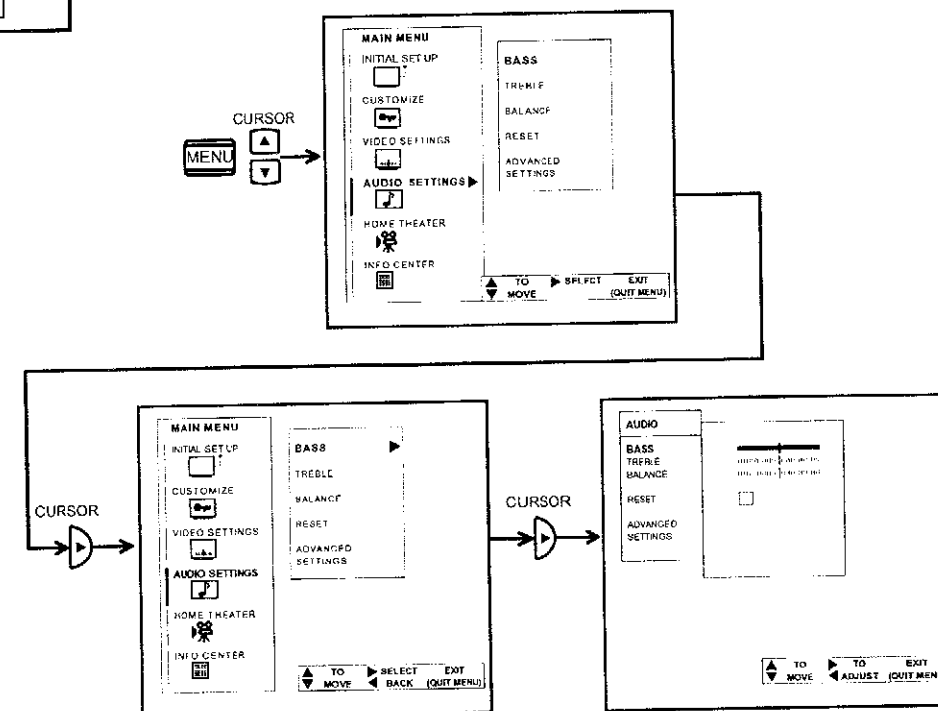
Use this function to adjust the amount of fine detail in the picture.

RESET

When RESET is selected, press CURSOR ▶ to return video adjustments to factory preset conditions.

AUDIO SETTINGS

Select AUDIO SETTINGS to adjust the TV to your preference and to improve the sound quality.



Use CURSOR ▲ or ▼ to highlight the function to be adjusted.
Press CURSOR ◀ or ▶ to adjust the function.
Use CURSOR ▲ or ▼ to highlight RESET or ADVANCED SETTINGS, then CURSOR ◀ to return to previous menu.
Press EXIT to quit menu.

BASS

This function controls the low frequency audio to all speakers.

TREBLE

This function controls the high frequency audio to all speakers.

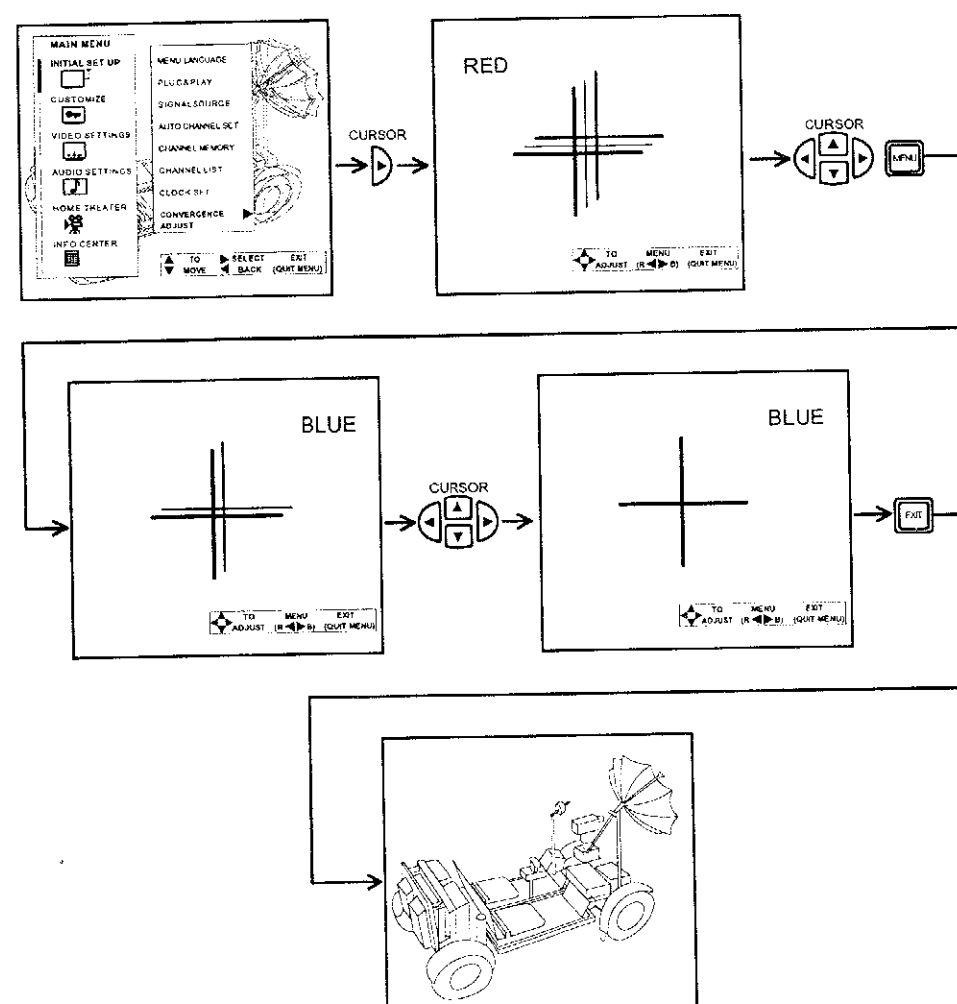
BALANCE

This function will control the left to right balance of the TV internal speakers, the AUDIO TO HI FI output, the TRANSMITTER OUT output, and the Surround Speakers.

RESET

When RESET is selected, press CURSOR ▶ to return audio adjustments to factory preset conditions.

CONVERGENCE ADJUST



Press the CURSOR ▲ or ▼ to move the color displayed up or down
Press CURSOR ◀ or ▶ to move the color displayed left or right.
Press MENU to change the color.
Press EXIT to quit menu.

CAUTIONS WHEN CONNECTING/DISCONNECTING THE HV CONNECTOR

Perform the following when the HV connector (anode connector) is removed or inserted for CPT replacement, etc.

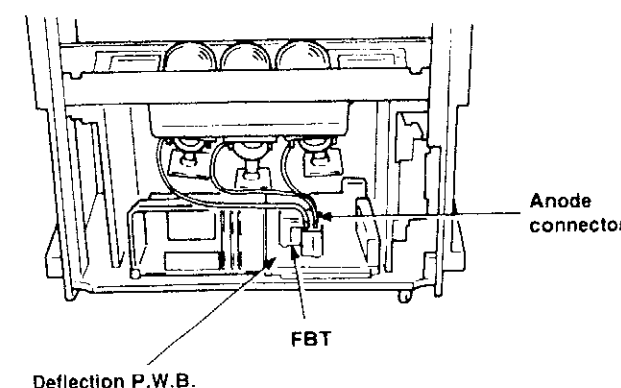


Fig. 5

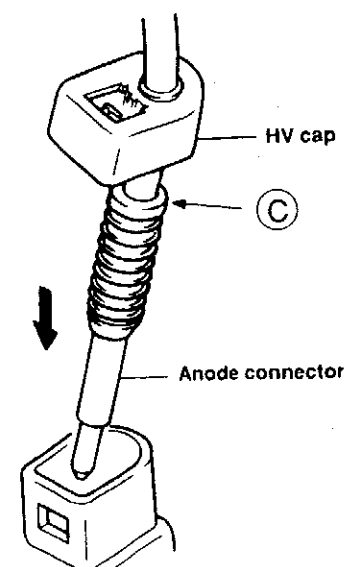


Fig. 7

During Removal

1. Insert a small flat-bladed screwdriver (adjustment screwdriver: 5-7 mm wide and 0.2-0.3 mm thick) into section (A) in Fig. 6 and then push it in the direction of arrow (B). The lock will release with a click. (The state in Fig. 8 (1) will change to that in Fig. 8 (2).)

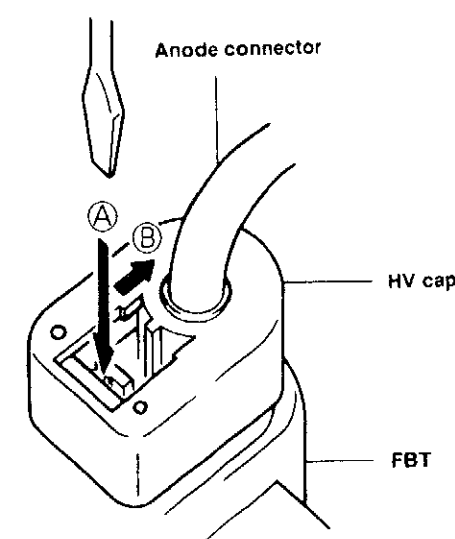
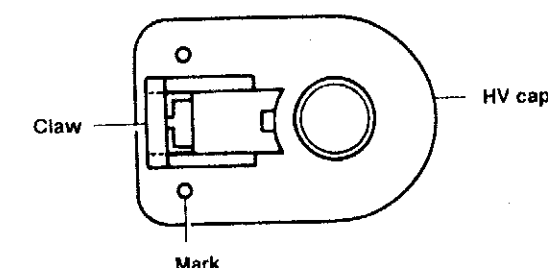


Fig. 6

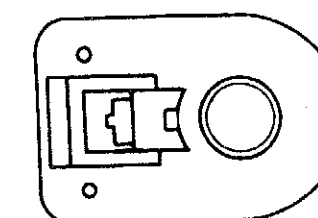
2. Remove the HV cap and remove the anode connector (Fig. 7).

During Insertion

1. Insert the anode connector deep into the FBT (to section (C) in Fig. 7) and then push the HV cap into the FBT until it clicks.
2. Make sure the connector is securely inserted. (Check that the claw is at the mark on the HV cap shown as in Fig. 8 (1).)



- (1) Lock on
(When connector is inserted)



- (2) Release
(When connector is removed)

Fig. 8

ADJUSTMENT INSTRUCTION

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1. ASSEMBLED PWB ADJUSTMENT

1.1 Memory initialization

Adjustment procedure

- (1) Press memory initialize key using the R/C.
If you do not have this key, short the pins of the 2 pin connector P11 for one second, then remove.
A beep will be heard.
- (2) Check the OSD according to the chassis type.

Initialize OSD (Memory Switches)

MEMORY SWITCH		
PIP 1	0	1
PIP 2	0	1
POWER ON1	0	1
POWER ON2	0	1
AUX 3	0	1
SUR 1	0	1
SUR 2	0	1
MAGIC F.	0	1
W. CONT	0	1
S. CONT	0	1
ANT	0	1
CTV/PTV	0	1
D. BASS	0	1
3D Y/C	0	1
NOTCH	0	1
PIP POSITION HP 0111 (0000-1111)		
VP 0111 (0000-1111)		
SHOOT BAL. ADJ 37 (0-63)		
SUB BRIGHT ADJ 127 (63-191)		

Note: The above table explains the AP62 chassis specification for the memory switch arrangement.

- (3) Press Memory Initialize key of the R/C one more time and check that the set is returned to factory shipping conditions.
If you do not have this key, short the pins of the 2 pin connector P11 for one second, then remove.

Note: The TV will be set to factory shipping conditions.
Do not unplug set or press any buttons during this operation.

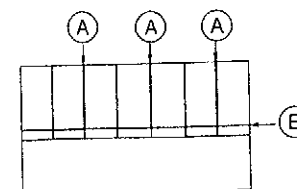
1.2 Comb filter operation check

Adjustment preparation

- (1) Receive the color bar signal at the regular tuning point.
- (2) Set the contrast control to MAX and the other controls to center.
- (3) Set the AI to OFF.

Adjustment procedure

- (1) Check that between the color bars there are line dots every second color bar as shown in the drawing.



Check (A) and (B) line dots.

	AP62
	Dots
(A)	X
(B)	None

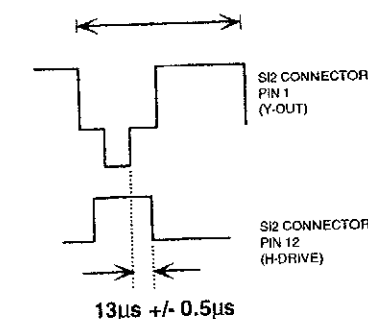
1.3 Horizontal coarse AFC adjustment (R339)

Adjustment preparation

- (1) Receive the reverse cross-hatch pattern signal.
(Cross-hatch lines are black.)
- (2) Connect the oscilloscope to S12 connector pin ① (Y-out) and pin ② (H-Drive).

Adjustment procedure

- (1) Adjust R339 (AFC) for 13μs delay between pin ① and ②.



1.4 Sub-picture position adjustment

Adjustment preparation

- (1) Select signal on main picture.
- (2) Video settings have to be at normal condition.
- (3) Select the single PIP mode.

Adjustment procedure

- (1) Press the Memory Initialize key on the R/C. If you do not have this key, short the pins of the 2 pin connector P11 for one second, then remove.
- (2) Press the ▼▲ buttons to select the PIP position mode.
- (3) Adjust the VP (vertical) and HP (horizontal) position using the ◀▶ buttons.
- (4) Press the Memory Initialize key of the R/C to store the value in memory. If you do not have this key, short the pins of the 2 pin connector P11 for one second, then remove.
- (5) Select single PIP mode and shift the sub-picture using the 'shift' button. Distance between PIP and edge of screen should be equal when shifted. If it is not, repeat (1) ~ (5).

Note: Check the position of Multi PIP mode. Check the right edge of the sub-pictures for MV-4 to make sure there is no separation between the Multi PIP and the edge of the screen.

2. FINAL ASSEMBLY ADJUSTMENT

2.1 Focus adjustment

Adjustment preparation

- (1) The set can face in any direction, west, east, north or south.
- (2) Receive the cross-hatch pattern signal.
CONTRAST: CENTER
BRIGHTNESS: -16 (-8 position shown on display)
- (3) The electrical focus adjustment should have been completed.
- (4) The centering DY inclination should have been adjusted.

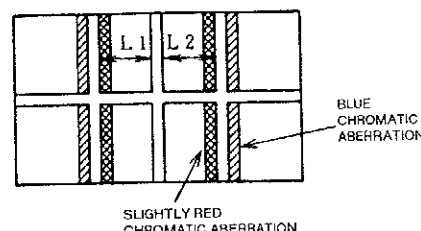
Adjustment procedure

- (1) Loosen the fixing screw on the lens cylinder so that the lens cylinder can be turned. (Be careful not to loosen too much. If it is loosened too much, rattling when tightening becomes greater and the focus may drift.) After completing steps (5), (6) and (7) below, tighten the fixing screws for each lens with a torque of 7-12kg/cm.

- (2) Apply covers to 2 of R, G and B lenses, and project a single color on the screen and adjust in sequence.
(The adjustment order of R, G and B is only an example.)
- (3) For each of the R, G and B lenses, observe the color aberration generated on the outer circumference of the cross-hatch bright line at the center section ± 3 pitches vertically and horizontally from the center.
- (4) If the lens adjustment knob is turned clockwise, viewed from the front, the color aberration changes as follows.

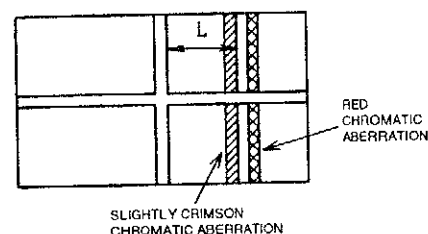
Lens	Change of color aberration
R lens	Red $\rightarrow$ Crimson
G lens	Blue $\rightarrow$ Red
B lens	Purple $\rightarrow$ Green

- (5) In case of G lens, set to the point where the chromatic aberration switches from blue to red. If the chromatic aberration appearing all over the screen is not the same, observe the horizontal bright line at the center of the screen and set to the position where red chromatic aberration slightly appears inside and blue outside (reference value: 1-3mm) within the cross-hatch pitches specified in Table below. When the red chromatic aberration appearing at both sides of the bright line is not equal, observe the side with larger chromatic aberration when adjusting.



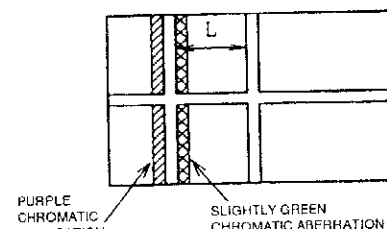
Set Size	Pitch between L1 & L2
50"	3.0 cross-hatch pitches
55"	3.0 cross-hatch pitches

- (6) In case of R lens, set to the position where the chromatic aberration changes from red to crimson. As shown below, observe the horizontal bright line at the center and set to the position where the crimson chromatic aberration slightly appears inside and red outside (reference value: 1-3mm) within the cross-hatch pitches specified in Table.



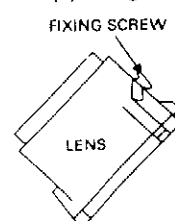
Set Size	Pitch between L
50"	3.0 cross-hatch pitches
55"	3.0 cross-hatch pitches

- (7) In case of B lens, set to the position where the chromatic aberration changes from purple to green. As shown below, observe the horizontal bright line at the center and set to the position where green chromatic aberration slightly appears inside and purple outside (reference value: 1-3mm) within the cross-hatch pitches specified in table below.

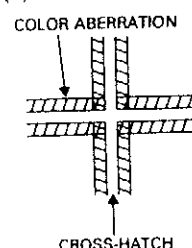


Set Size	Pitch between L
50"	3.0 cross-hatch pitches
55"	3.0 cross-hatch pitches

Notes: (1) Fixing screw



(2) Color aberration



- (3) Since the G light is very important for picture quality and performance, pay special attention in its adjustment.

Note: Be careful not to touch the lens with your fingers when adjusting.

- (4) For red, setting to the center between red and crimson is optimum.
- (5) For blue, setting to the center between purple and green is optimum.

2.2 White balance adjustment

- (1) Screen adjustment
- (2) High brightness white balance
- (3) Low brightness white balance

Screen adjustment VRs	Drive adjustment VRs
Red: Focus Pack	Red: R873
Green: Focus Pack	Green: R843
Blue: Focus Pack	

Adjustment preparation

- (1) Start adjustment 20 minutes or more after the power is turned on.
- (2) The vertical incident illumination on the screen should be 20 lux or less.
- (3) Set the video settings (contrast: max, others: center) to standard condition.
- (4) For low brightness white balance adjustment, input a white raster signal level of 0.300Vp-p (Video input level).
- (5) For high brightness white balance adjustment, input a white raster signal level of 0.715Vp-p (Video input level).
- (6) Set the drive adjustment VRs (red and green) to 12 - 2 o'clock position.

- (7) Turn the screen adjustment VRs (red, green, blue) fully counter-clockwise.
- (8) Set video advanced setting white control to warm position.
- (9) Set the S301 switch to the front as viewed from the front of the signal sub P.W.B. (Set to SERVICE side.)

Adjustment procedure

- (1) Gradually turn the screen adjustment VRs (red, green, blue) clockwise and set them where the red, green and blue slightly bright lines just appear evenly on the screen.
- (2) Return S301 to the NORMAL side.
- (3) Select the input signal for high brightness.
(video level = 0.715Vp-p $\pm$ 0.015).
- (4) Adjust the high brightness white balance using the drive adjustment VRs (red, green).
- (5) Select the input signal for low brightness
(video level = 0.300Vp-p $\pm$ 0.015).
- (6) Adjust the low brightness white balance using the screen adjustment VRs (red, green, blue). (Visually adjust.)
- (7) Check that high brightness white balance is obtained. If it does not, return to step (5).

Note: When adjusting the white balance, if the horizontal single raster is to be obtained using S301, check that the screen adjustment VRs are turned fully counterclockwise. Since the phosphorescent surface of the CRT is likely to be burnt, be careful.

White balance: 7500°K+0MPCD
Color coordinate: X.....0.301
Y.....0.310

2.3 Sub brightness adjustment

Adjustment preparation

- (1) Start adjustment 20 minutes or more after the power is turned on. Receive the color bar signal.
- (2) Set the contrast and color controls to minimum.
- (3) The vertical incident illumination on the screen should be 20 lux or less.

W	Y	CY	G	MC	R	BL
75%						
A7	A6	A5	A4	A3	A2	A1
GRAY SCALE						
b						
c						
d						
Q	I	W 100%			BLK	

Adjustment procedure

- (1) Press the memory initialize key on the R/C. If you do not have this key, short the pins of the 2 pin connector P11 for one second, then remove. A beep will be heard.
- (2) Press the $\blacktriangle$ button to select SUB-BRIGHTNESS mode.
- (3) Use the $\blacktriangle$ and $\blacktriangleright$ buttons to increase or decrease so that points A1 and A2 sink to black and A3 rises slightly above it. (Visually adjust)
- (4) After above adjustment, SUB-BRIGHTNESS will have value between 63 and 191. Adjustment is now complete.
- (5) After adjustment is done, press the memory initialize key on the R/C one more time and the data is stored in memory. If you do not have this key, short the pins of the 2 pin connector P11 for one second, then remove.

Note: When selecting SUB-BRIGHTNESS mode the μ con sets the CONTRAST and COLOR to min. automatically but make sure that the other conditions are center. Directly observe the screen by eye without using a mirror.

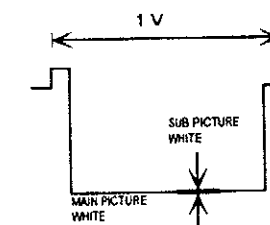
2.4 Sub picture white balance adjustment (R029, R026, R024)

Adjustment preparation

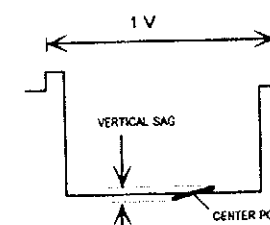
- (1) Start adjustment after power is on for 20 minutes.
- (2) Use a white raster signal for adjustment.
- (3) Press "FREEZE" on the remote control and select 'single' freeze mode to display the sub picture.
- (4) Set contrast to center, brightness minimum, AI off.

Adjustment procedure

- (1) Connect oscilloscope to P802 and adjust R029 to match blue level of main and sub pictures.
- (2) Repeat for P832 and R026 green, P862 and R024 for red.



Note: If the sub picture has a signal sag, adjust level at center point.



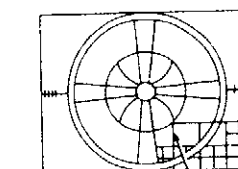
2.5 Shoot balance adjustment (R333)

Adjustment preparation

- (1) Receive the reverse cross-hatch pattern signal. (Cross-hatch lines are black.)
- (2) Set the video condition to factory reset.

Adjustment procedure

- (1) Press the memory initialize key of the R/C. If you do not have this key, short the pins of the 2 pin connector P11 for one second, then remove. A beep will be heard.
- (2) Press the $\blacktriangle$ button and select SHOOT BALANCE mode.
- (3) Using the $\blacktriangle$ and $\blacktriangleright$ buttons, gradually adjust so the widths of pre-shoot and over-shoot of the vertical line (black) shown in the circle pattern are balanced. (Visually adjust)
- (4) After adjustment is done, press the memory initialize key on the R/C one more time and the data is stored in memory. If you do not have this key, short the pins of the 2 pin connector P11 for one second, then remove.



Note: Directly observe the screen by eye without using a mirror.

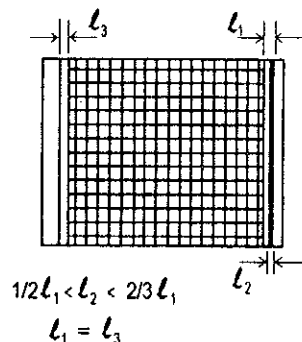
2.6 Horizontal AFC adjustment (R339)

Adjustment preparation

- (1) Receive the reverse cross-hatch pattern signal. (Cross-hatch lines are black.)
- (2) Set video conditions to factory reset.
- (3) Lens focus should be completed.
- (4) Electrical focus should be coarse adjusted.
- (5) The digital convergence RAM should be cleared (uncorrected state). With the TV set off, press and hold the service switch located on the power/defl. P.C.B. (see page 27), and then press the power button.
- (6) Raster inclination should be completed.

Adjustment procedure

- (1) Project only green color. Cover R & B lenses or short 2P mini connectors on CPT P.W.B.'s.
- (2) Adjust H-size to minimum. R649 fully counterclockwise.
- (3) Adjust green centering magnet (located on DY) to shift picture left to display edge of raster.
- (4) Adjust AFC (R339) so foldover of front porch occurs. Amount of foldover is 1/2 to 2/3 of front porch (l_1).



- Note:** (1) Front and back porch of video should be equal.
(2) If adjustment is difficult with test pattern, follow adjustment 1.3.

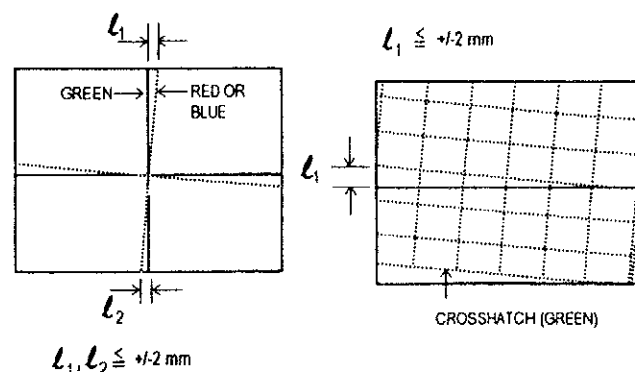
2.7 Raster inclination adjustment (Deflection yoke)

Adjustment preparation

- (1) The set can face east or west.
- (2) Input the single cross test signal.
- (3) Set video conditions to factory reset.
- (4) The lens focus adjustment should have been completed.
- (5) The electric focus should have been coarse adjusted.
- (6) The digital convergence RAM should be cleared (uncorrected state). With the TV set off, press and hold the service switch located on the power/defl. P.C.B. (see page 27), and then press the power button.
- (7) Start adjustment 20 minutes or more after TV is turned on.

Adjustment procedure

- (1) Apply covers to the R and B lenses and project only green light.
- (2) Turn the G deflection yoke and adjust the vertical raster inclination.
- (3) Then, remove the cover of R or B lens and project red or blue light and green light together on the screen.
- (4) Turn the deflection yoke of R or B and set so that the inclination of R or B with respect to the green light is as shown below on the top and bottom sides.
- (5) After raster inclination adjustment, fixing screw of DY should be screwed with 12 ± 2 kg-cm torque.



- Notes:** (1) If internal cross-hatch does not appear after clearing RAM data, press the service switch (see page 27) again.
(2) To restore old RAM data, turn TV off and on.

2.8 Raster position adjustment

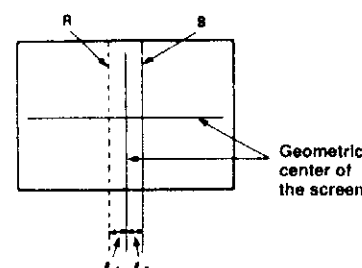
Adjustment preparation

- (1) The set can face east or west.
- (2) Input the single cross test signal.
- (3) Set video conditions to factory reset.
- (4) The lens focus adjustment should have been completed.
- (5) The electric focus should have been coarse adjusted.
- (6) The digital convergence RAM should be cleared (uncorrected state). With the TV set off, press and hold the service switch located on the power/defl. P.C.B. (see page 27), and then press the power button. Use a small insulated tool to reach inside the control panel to press the switch.
- (7) Start adjustment 20 minutes or more after TV is turned on.

Adjustment procedure

- (1) Turn the centering magnets for red, green, and blue to satisfy the condition below. The red and blue horizontal lines should match with green.

Size	Vert. Line	Side of Green
50"	Red l_1	7mm left
50"	Blue l_2	42mm right
55"	Red l_1	7mm left
55"	Blue l_2	42mm right



- Notes:** (1) If internal cross-hatch does not appear after clearing RAM data, press the service switch (see page 27) again.
(2) To restore old RAM data, turn TV off and on.

2.9 Vertical size adjustment (R612)

Adjustment preparation

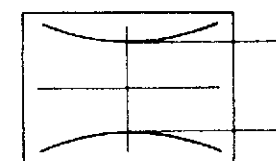
- (1) The set can face east or west.
- (2) Input the single cross test signal.
- (3) Set video conditions to factory reset.
- (4) The lens focus adjustment should have been completed.
- (5) The electric focus should have been coarse adjusted.
- (6) The digital convergence RAM should be cleared (uncorrected state). With the TV set off, press and hold the service switch located on the power/defl. P.C.B. (see page 27), and then press the power button.
- (7) Start adjustment 20 minutes or more after TV is turned on.

Adjustment procedure

- (1) Turn only the green by applying covers to the red and blue lens or shorting the 2 pin TS connectors on the red and blue CPT P.W.B.
- (2) Count the vertical lines of the DCU cross hatch. If the number of vertical lines is 9, go to step (3). If the number of vertical lines is 8, push "SRD" key and then push "5" key on the R/C so the number of vertical lines becomes "9".
- (3) Turn vertical amplitude adjustment VR (R612) so that the distance between the top and bottom horizontal lines is equal to the size shown in the table.

Size	l
50"	650 ± 5 mm
55"	715 ± 5 mm

- Note:** (1) If internal cross-hatch does not appear after clearing RAM data, press the service switch (see page 27) again.
(2) To restore old RAM data, turn TV off and on.
(3) 'SRD' key is not on R/C CLU-417UI. If 'SRD' is needed, please use R/C CLU-951MP.



2.10 Horizontal size adjustment (R649)

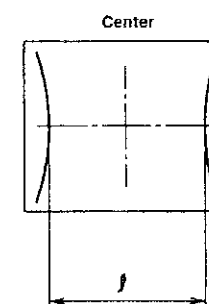
Adjustment preparation

- (1) The set can face east or west.
- (2) Input the single cross test signal.
- (3) Set video conditions to factory reset.
- (4) The lens focus adjustment should have been completed.
- (5) The electric focus should have been coarse adjusted.
- (6) The digital convergence RAM should be cleared (uncorrected state). With the TV set off, press and hold the service switch located on the power/defl. P.C.B. (see page 27), and then press the power button.
- (7) Start adjustment 20 minutes or more after TV is turned on.

Adjustment procedure

- (1) Project only green, the same as 2.9.
- (2) Turn horizontal amplitude adjustment VR (R649) so distance between the left and right vertical lines is equal to the size shown in the table.

Size	l
50"	950 ± 5 mm
55"	1045 ± 5 mm



- Note:** (1) If internal cross-hatch does not appear after clearing RAM data, press the service switch (see page 27) again.
(2) To restore old RAM data, turn TV off and on.

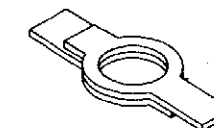
2.11 Beam alignment

Adjustment preparation

- (1) Adjust at least 30 minutes after turning on power switch.
- (2) The static convergence data should be cleared (see section 1.1 Memory initialization).
- (3) Raster inclination, centering, horizontal and vertical amplitudes and optical focus adjustment should be completed.
- (4) Set video conditions to factory reset.
- (5) Receive cross-hatch signals. (Use of internal cross-hatch signals allowed.)
- (6) Short-circuit all metal parts (metal fittings, centering magnet) installed on the projection tubes to GNDs of the projection tubes. Since metal parts are charged with electricity, shocks may be caused if they are not short-circuited.

Adjustment procedure

- (1) Green (G) tube beam alignment adjustment. Short-circuit 2P subminiature connector plug pins of Red (R) and Blue (B) on the CPT boards and project only Green (G) tube.
- (2) Put Green (G) tube beam alignment magnet to the cancel state as shown below.



- (3) Turn the Green (G) static focus (Focus Pack) counterclockwise all the way and make sure of position of cross-hatch center on screen. (Halo state.)
- (4) Turn Green (G) static focus (Focus Pack) clockwise all the way. (Blooming state.)
- (5) Turn two magnets forming alignment magnet in any desired direction and move cross-hatch center to position found in (3).
- (6) If image position does not shift when Green (G) static focus (Focus Pack) is turned, Green (G) beam alignment has been completed.
- (7) If image position shifts when Green (G) static focus (Focus Pack) is turned, repeat (2)-(6).
- (8) Conduct beam alignment for Red (R) focus: Focus Pack EFPK Blue (B) focus: Focus Pack EFPK
- (9) Upon completion of adjustment, fix beam alignment magnets with white paint.

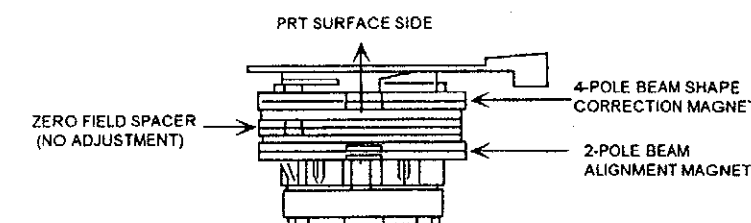
2.12 Beam shape adjustment

Adjustment preparation

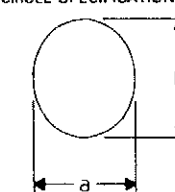
- (1) The beam alignment should have been completed.
- (2) The raster inclination, centering, horizontal/vertical amplitude and optical focus adjustments should have been completed.
- (3) Set video conditions to factory reset.
- (4) Input the dot signal.

Adjustment procedure

- (1) Green PRT beam shape adjustment. Short-circuit 2P submini connectors on Red and Blue CPT P.W.B.s to project only the Green beam.
- (2) Turn the green static focus fully clockwise. (Blooming.)
- (3) Make the dot at the screen center a true circle using the 4-pole magnet as shown below.
- (4) Also adjust the Red and Blue PRT beam shapes according to the steps (1) to (3).
- (5) After the adjustment is completed, return R, G and B static VRs to the Just focus point.



TRUE CIRCLE SPECIFICATION



TRUE CIRCLE DEGREE: a/b
SPECIFICATION: 0.9-1.1

2.13 Static focus adjustment

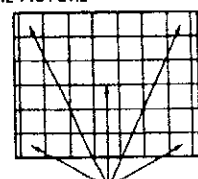
Adjustment preparation

- (1) The raster inclination, centering, horizontal/vertical amplitude and optical/electrical focus beam alignment should have been adjusted.
- (2) The static convergence data should be cleared.
- (3) Set video conditions to factory reset.
- (4) Receive the cross-hatch pattern signal.
- (5) Apply covers to the lenses of colors other than the color to be adjusted and project a single color.

Adjustment procedure

- (1) Red (R), Green (G) and Blue (B) static focus adjustment. Vary the static focus VR (focus pack EFPK) and make the center of the cross-hatch pattern clearest.
- (2) Observe the corners of the picture and check that the focus does not get conspicuously worse.

OBSERVING POINTS OF THE CORNER OF THE PICTURE



OBSERVING POINTS

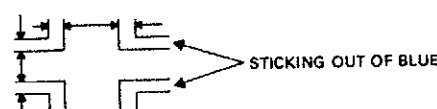
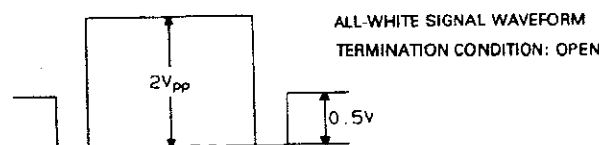
2.14 Blue defocus adjustment

Adjustment preparation

- (1) Optical and electrical focus adjustment should have been completed.
- (2) The convergence adjustment should have been completed.
- (3) Set video conditions to factory reset.

Adjustment procedure

- (1) Input an all-white signal shown below to VIDEO input.
- (2) Short-circuit 2P sub-mini connectors on the red and green CPT P.W.B.s to display only the blue beam.
- (3) Turn the B Focus VR (Focus Pack) fully clockwise.
- (4) Measure the brightness at the center of the screen and turn the B Focus VR (Focus Pack) counterclockwise to adjust the brightness of blue as shown in Table below.
- (5) After the adjustment is completed, if blue exceeds the specification, turn and adjust focus so that the sticking out part of blue satisfies the specification.



UNEVENNESS SPECIFICATION: $\pm 1 \text{ cd/m}^2$

Defocus brightness specification

Screen Size	Brightness of Blue
50"	37 cd/m^2
55"	30 cd/m^2

Defocus sticking out specification

Screen Size	Blue sticking out
50"	1.0 mm
55"	1.0 mm

Condition: User controls are set to the initial set positions (for shipment) Measuring point Screen center.

Cautions: Correct the brightness gauge and amplitude of the all-white signal periodically. The aperture angle of the brightness gauge is 1° . Use a cross-hatch pattern to check.

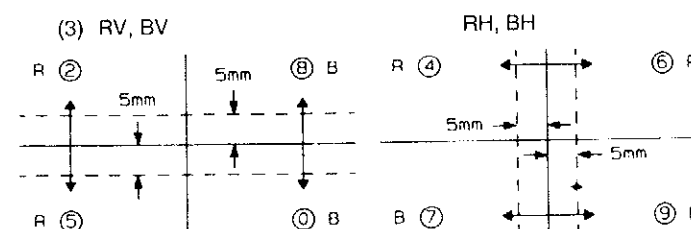
2.15 Static convergence adjustment

Adjustment preparation

- (1) The screen can face east or west.
- (2) Display the cross pattern signal or the cross-hatch pattern signal.
- (3) R, G and B lens focus adjustment and R, G and B raster inclination adjustment should have been completed.
- (4) R, G, and B raster position (centering magnet) adjustment should have been completed.
- (5) Vertical and horizontal size adjustments should have been completed.

Adjustment procedure

- (1) Set to convergence adjust mode using the MENU and CURSOR buttons of the remote control.
- (2) Check that the variable range of the static convergence adjustment is obtained as shown below using the cursor buttons of the remote control transmitter.



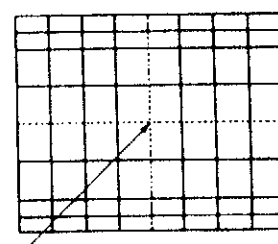
If the adjustment cannot be done, turn the centering magnets for R and B and re-adjust the R and B raster position.

Note: (1) Static convergence is set to standard mode during memory initialization.
(2) Refer to page 14 for static convergence adjustment.

2.16 Digital convergence adjustment

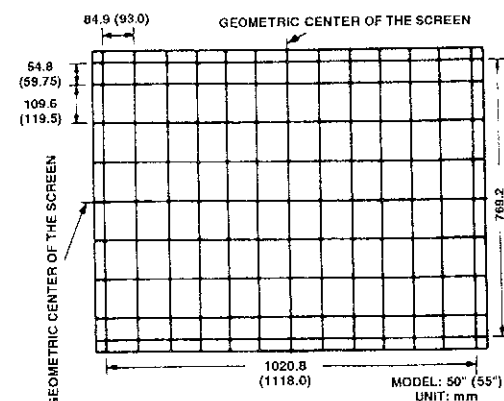
Adjustment preparation

- (1) Receive an RF or video signal.
- (2) Set controls to factory preset.
- (3) Install jig screen on the set.
- (4) Note the center of the video pattern displayed. This is necessary to match dotted lines (adjustment point viewed) and actual point that is adjusted and displayed by the video signal.
- (5) Press the service only switch. (See page 27). The pattern displayed is now the digital convergence mode.
- (6) When performing a complete digital convergence adjustment CLEAR DATA in RAM. See 2.7. (1)-(7).



Adjustment point

JIG SCREEN SPECIFICATION



- Notes:** (1) Jig screen part number:
50" - H310354
55" - H310356
- (2) If only minor adjustments to convergence are needed, the jig screen is not necessary. Use digital data stored in memory and one color as a reference (red, green, or blue). DO NOT CLEAR DATA and WRITE to ROM memory.

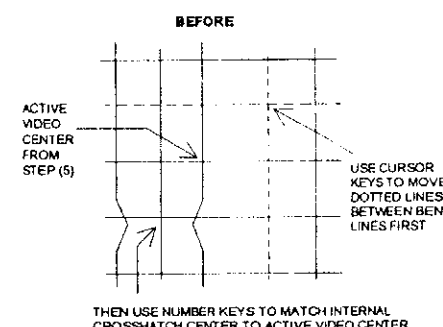
2.16.1 Phase adjustment (service mode)

Adjustment preparation

- (1) PHASE adjustment — This is to match the digital convergence cursor position to the video image displayed, and to match the digital convergence cursor position (dotted lines) to digital convergence data position (bent lines).

Adjustment procedure

- (1) Press the SRD button on the remote to select phase adjustment. (Only Green displayed)
- (2) Identify the bent lines and use the cursor buttons to move the dotted lines in between as shown.
- (3) Press SRD to exit PHASE mode.
- (4) Press ENTER 5 times to display external signal.
- (5) Identify center of active video, then press ENTER 5 times to return to internal cross-hatch.
- (6) Press SRD (phase adj.), and use 2, 4, 5 and 6 to position internal cross-hatch center on active video center identified in step (5).
- (7) Press SRD to exit PHASE mode.



2.16.2 Raster position adjustment

Adjustment preparation

- (1) Position adjustment — This will move an entire color. Use this adjustment to match colors at the center of the screen. (Active video center from external signal and physical screen center should now match from phase adj. 2.16.1.)
- (2) Use the buttons below to switch color to adjust.
"RECALL" - Green
"O" - Red
"AVX" - Blue

Adjustment procedure

- (1) Press the FREEZE button. Extra horizontal lines appear to confirm raster position mode.
- (2) Use the cursor buttons to adjust position.
- (3) Press FREEZE again to exit raster position mode.

Notes: (1) Other functions cannot be accessed when in raster position adjustment mode. Press FREEZE and confirm extra horizontal lines disappear to exit raster position mode.
(2) Press MENU to switch between all colors displayed or adjustment color and Green only.

2.16.3 Convergence point adjustment

Adjustment preparation

- (1) Select color to adjust.
"RECALL" - Green
"O" - Red
"AVX" - Blue
- (2) Use 4, 6, 2, and 5 to move the cursor position (dotted lines).
- (3) Use cursor buttons to move the convergence point.
- (4) Three adjustment modes are available:
1. (3x3) Press "RECALL" 5 times
2. (7x5) Press "O" 5 times
3. (13x9) Press "AVX" 5 times

For touch-up, only the (13x9) mode is necessary. This will adjust every cross-hatch intersection point on the screen. For complete adjustment, start with (3x3) mode. This will adjust center point and eight edge points only, but will greatly reduce adjustment time. Then use (7x5) mode, and finally (13x9) mode to finish convergence. If "S" distortion appears between cross-hatch lines repeat (7x5) mode to change calculation process while adjusting to remove distortion, then return to (13x9) mode to finish touch-up convergence.

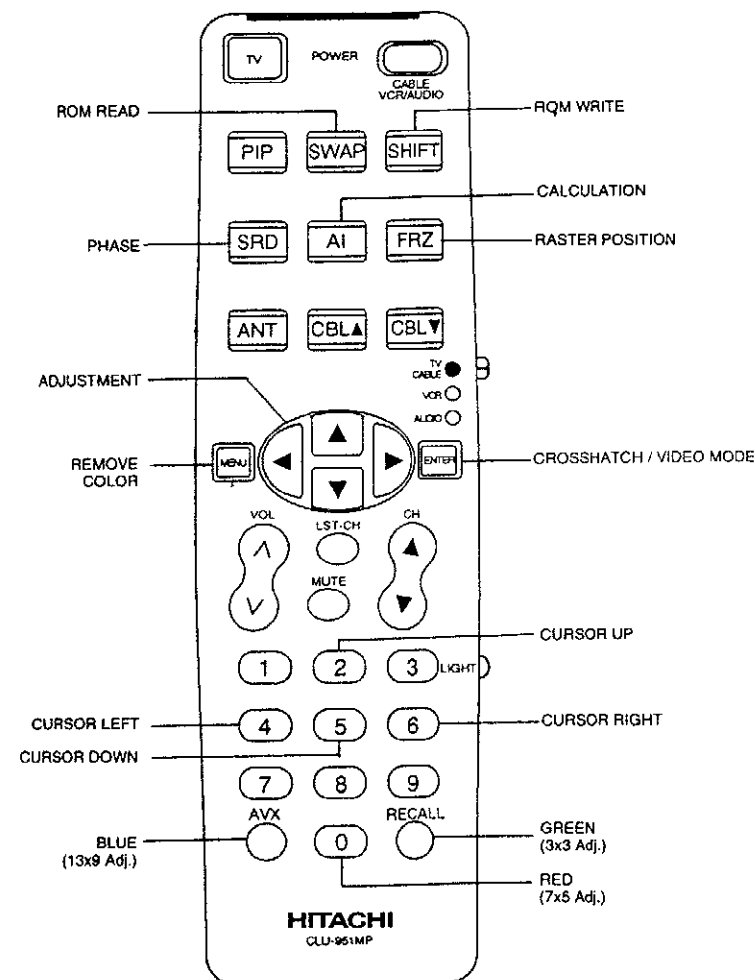
Adjustment procedure

- (1) Start adjustment at the center of the screen.
- (2) Continue adjustment at next closest position.
- (3) Adjust center area first, and ending with edge sections.
- (4) Press the AI button to perform interpolation operation. This process will take about 15 seconds and no picture will be seen at this time.
- (5) After interpolation, check convergence again and repeat (1)-(5) if necessary.
- (6) When convergence is acceptable, press SHIFT to write data to ROM memory. ROM WRITE? is displayed to alarm system that ROM will be overwritten with new data. Press the SHIFT button again to write displayed data to ROM.
- (7) DATA WRITE TO ROM will take approximately 20 seconds and no picture will be displayed.
- (8) Green dots will be displayed when operation is complete.
- (9) Press MUTE to return to convergence pattern, then confirm again convergence is acceptable.

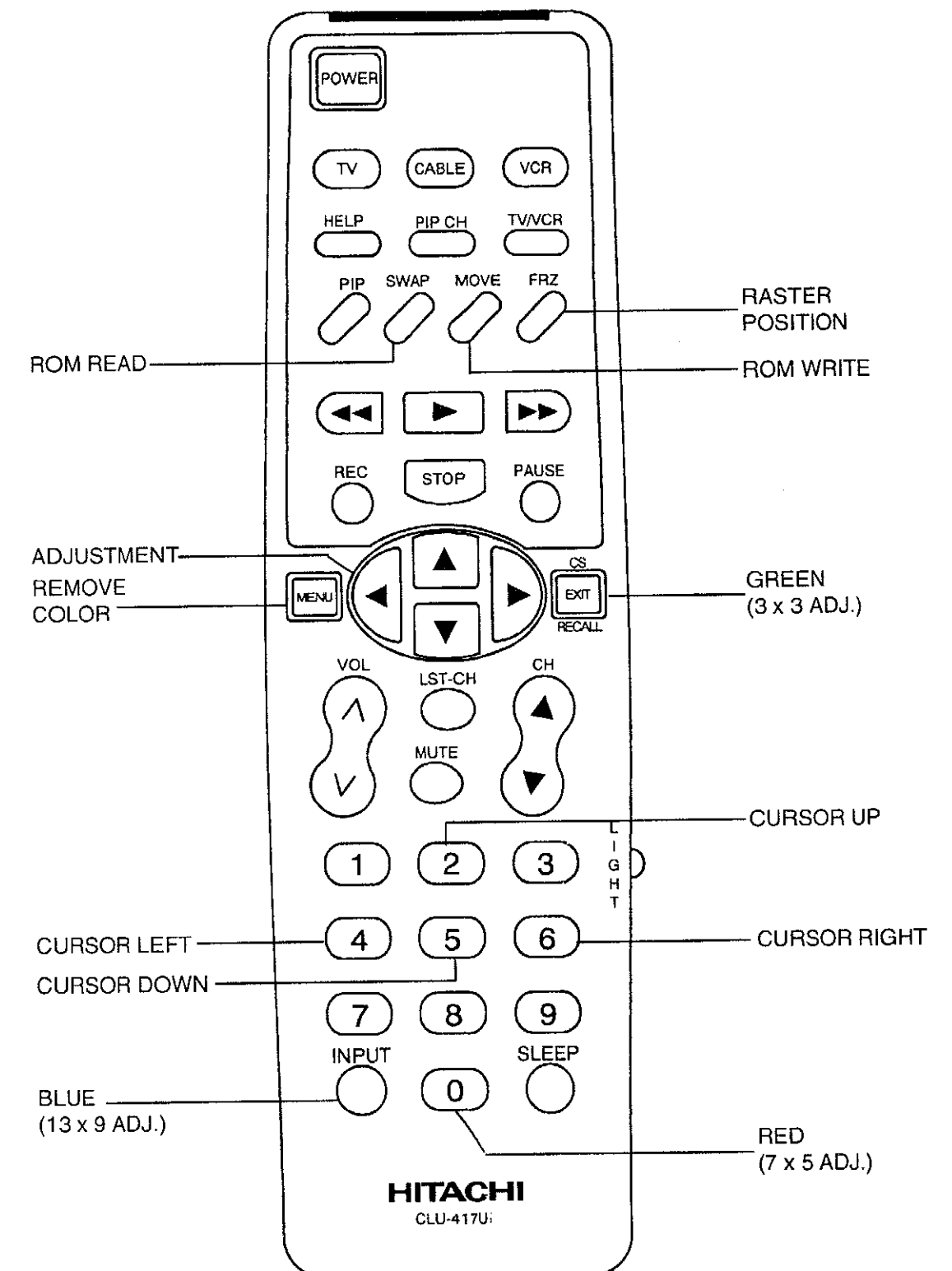
Notes: (1) Display only green for easier adjustment and match to jig screen. Press "MENU", THEN PRESS "RECALL".
(2) Perform interpolation and data write to ROM after

- green adjustment. Once green has been confirmed to match jig screen, the jig screen can be removed. Do not readjust the green color after jig screen has been removed. This is now your reference color.
- (3) Display green and red only and match red to green.
 - (4) Display all colors and match blue to green and red. Touch-up red color if necessary.
 - (5) Existing DATA in ROM can be read by pressing the SWAP button 2 times. This data can be used after replacing a component (CRT, DY, etc.) Where complete convergence adjustment is not necessary be careful not to overwrite this data.
DO NOT write cleared RAM data into ROM or a complete convergence adjustment will be necessary.

2.16.4. Digital Convergence Remote Control



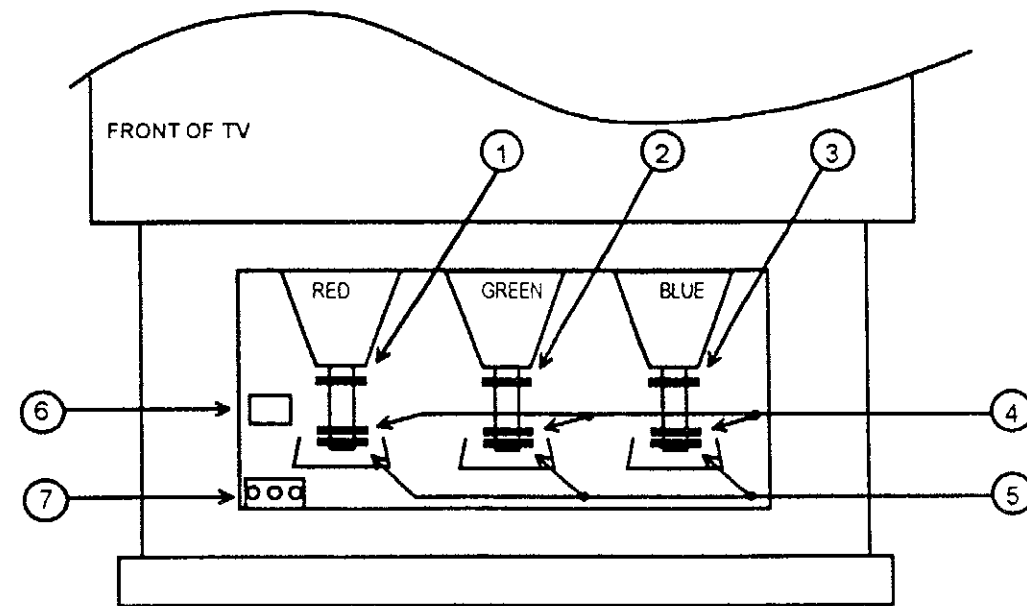
2.16.4. Digital convergence remote control



Note: Digital Convergence Adjustment procedures (2.16) were described for use with a CLU-951MP remote control. It is not possible to make Phase Adjustment (2.16.1) using the CLU-417UI remote control. If phase adjustment is necessary, please use the CLU-951MP remote control.

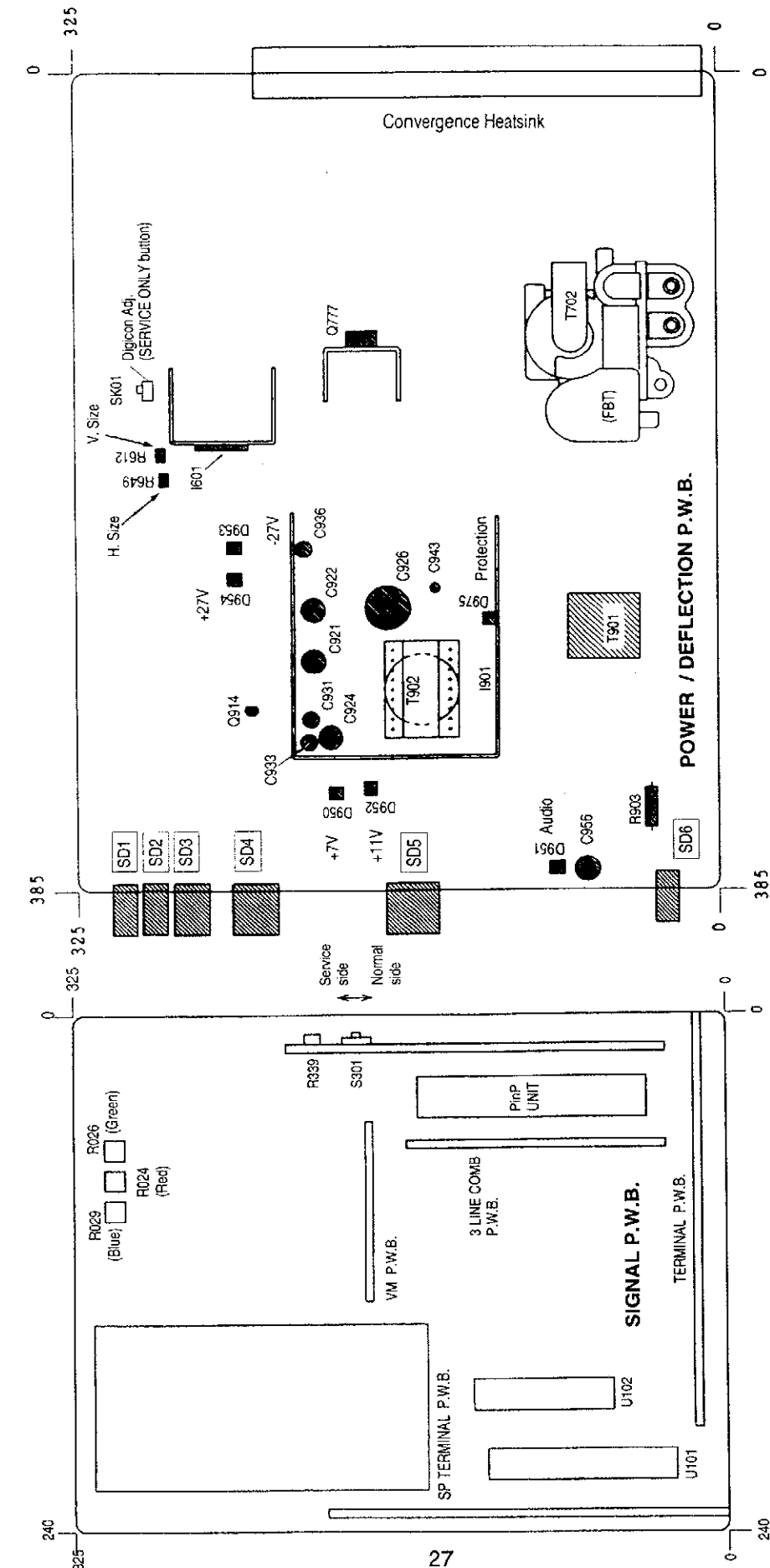
3. ADJUSTMENT POINT

3.1 CRT, cabinet locations

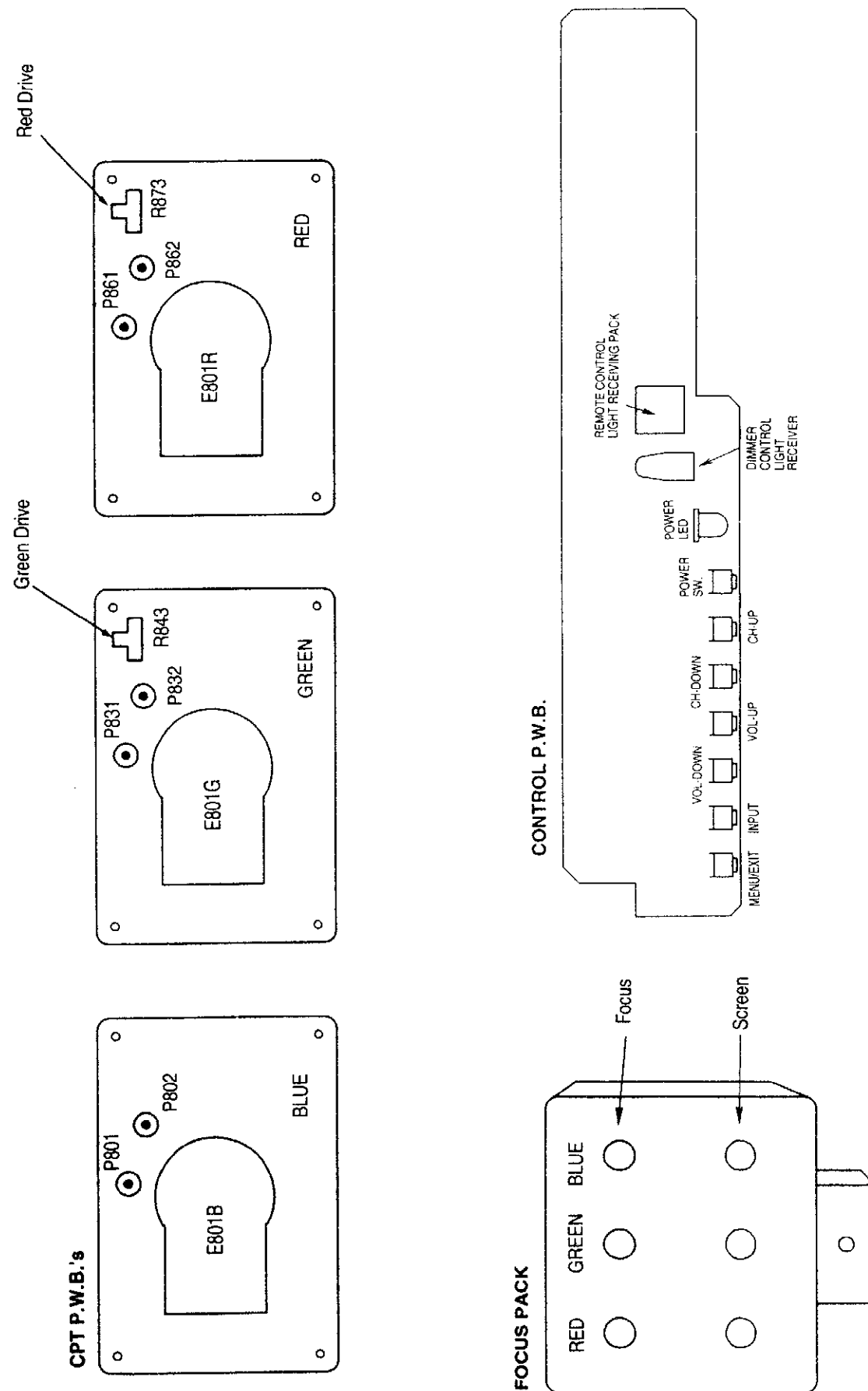


1. CENTERING MAGNET FOR RED PRT
2. CENTERING MAGNET FOR GREEN PRT
3. CENTERING MAGNET FOR BLUE PRT
4. 4-POLE MAGNET FOR BEAM FORM ADJUSTMENT
5. BEAM ALIGNMENT MAGNET
6. DIGITAL CONVERGENCE MODULE
7. FOCUS PACK (TOP ADJUSTMENTS FOR FOCUS, BOTTOM FOR SCREEN)

3.2 Signal PWB, Power/Deflection P.W.B. adjustment points

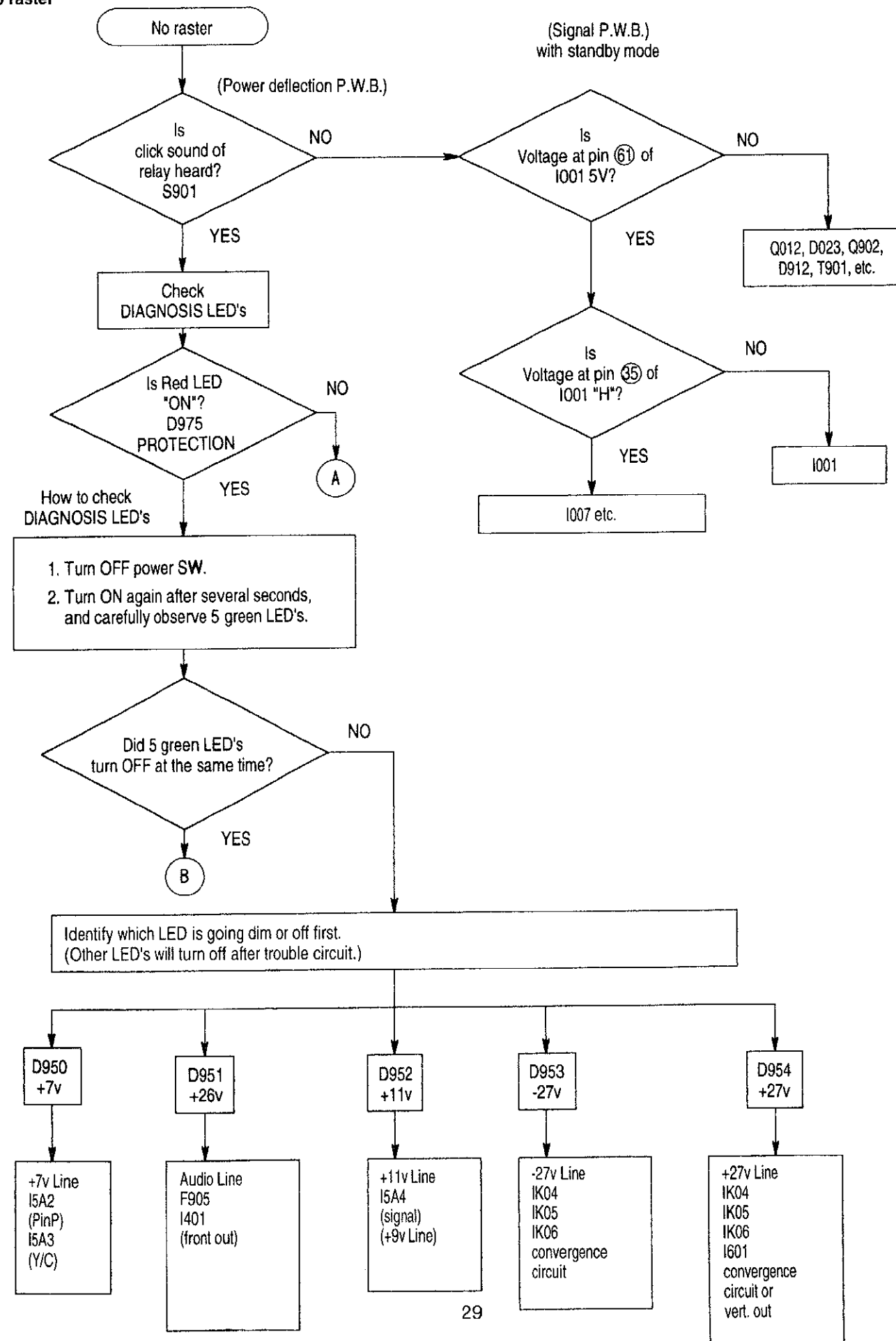


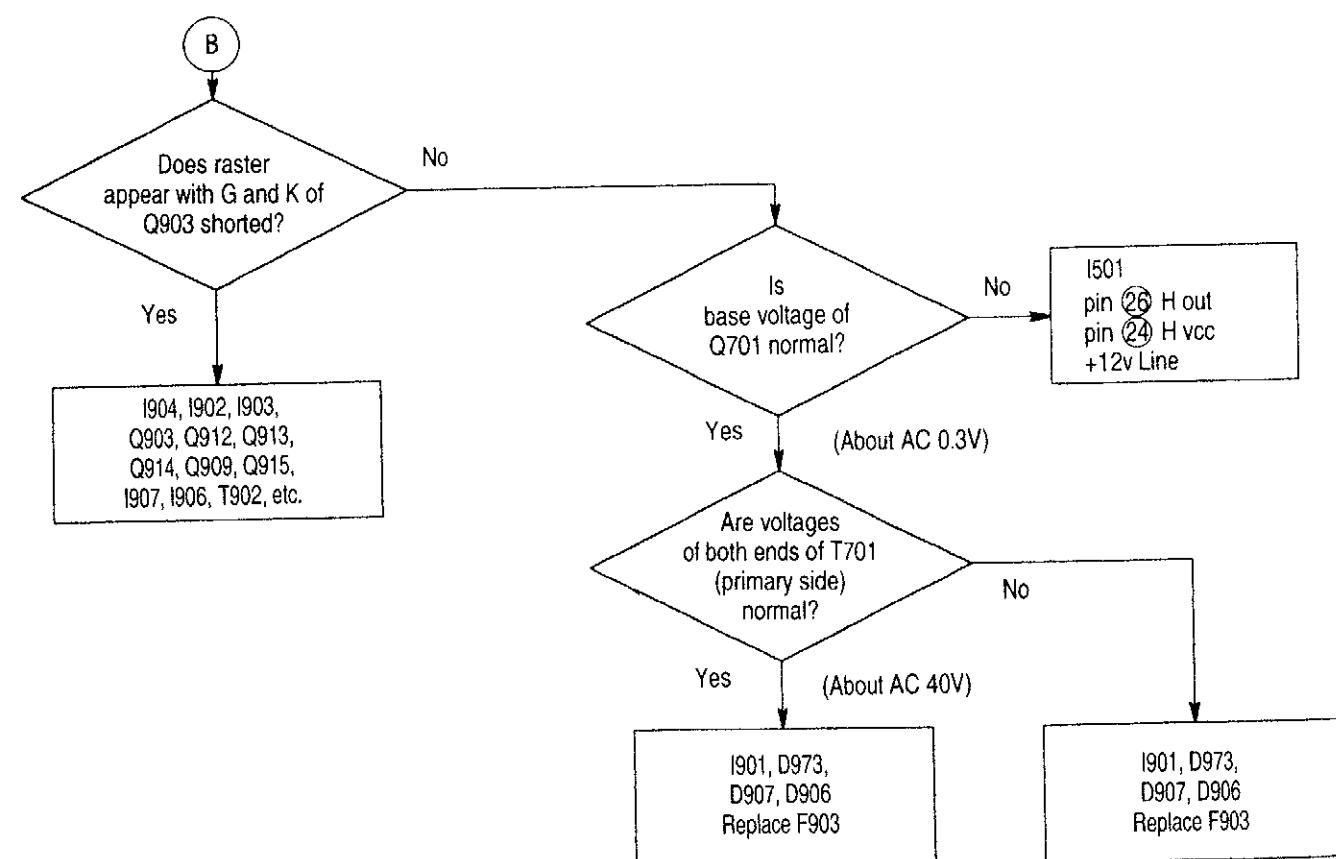
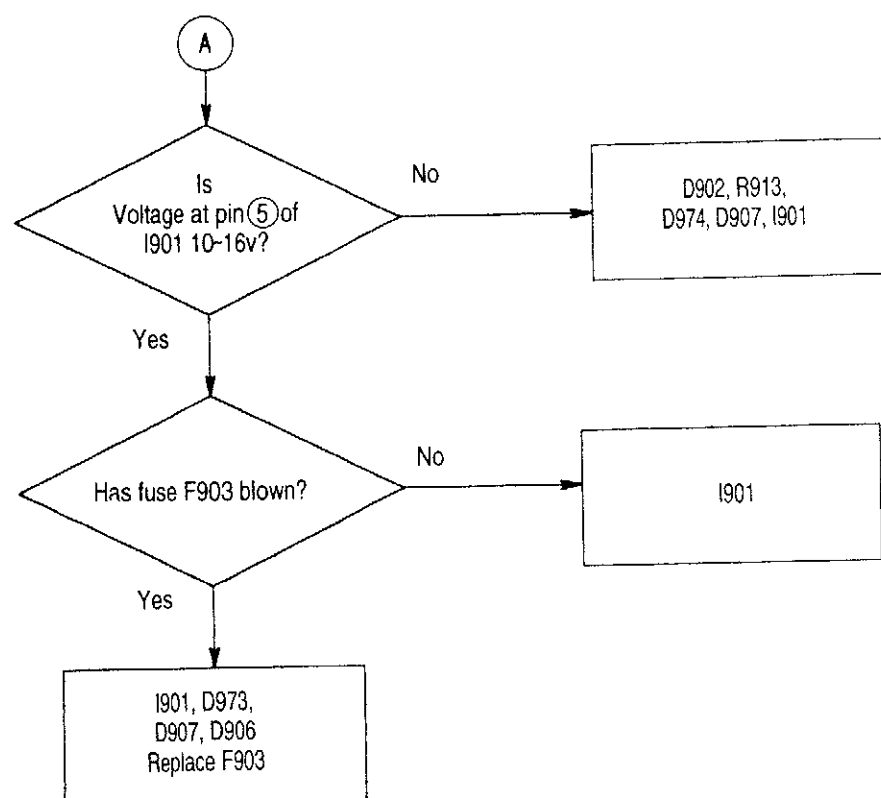
3.3 CPT, Control P.W.B., Focus Pack adjustment points



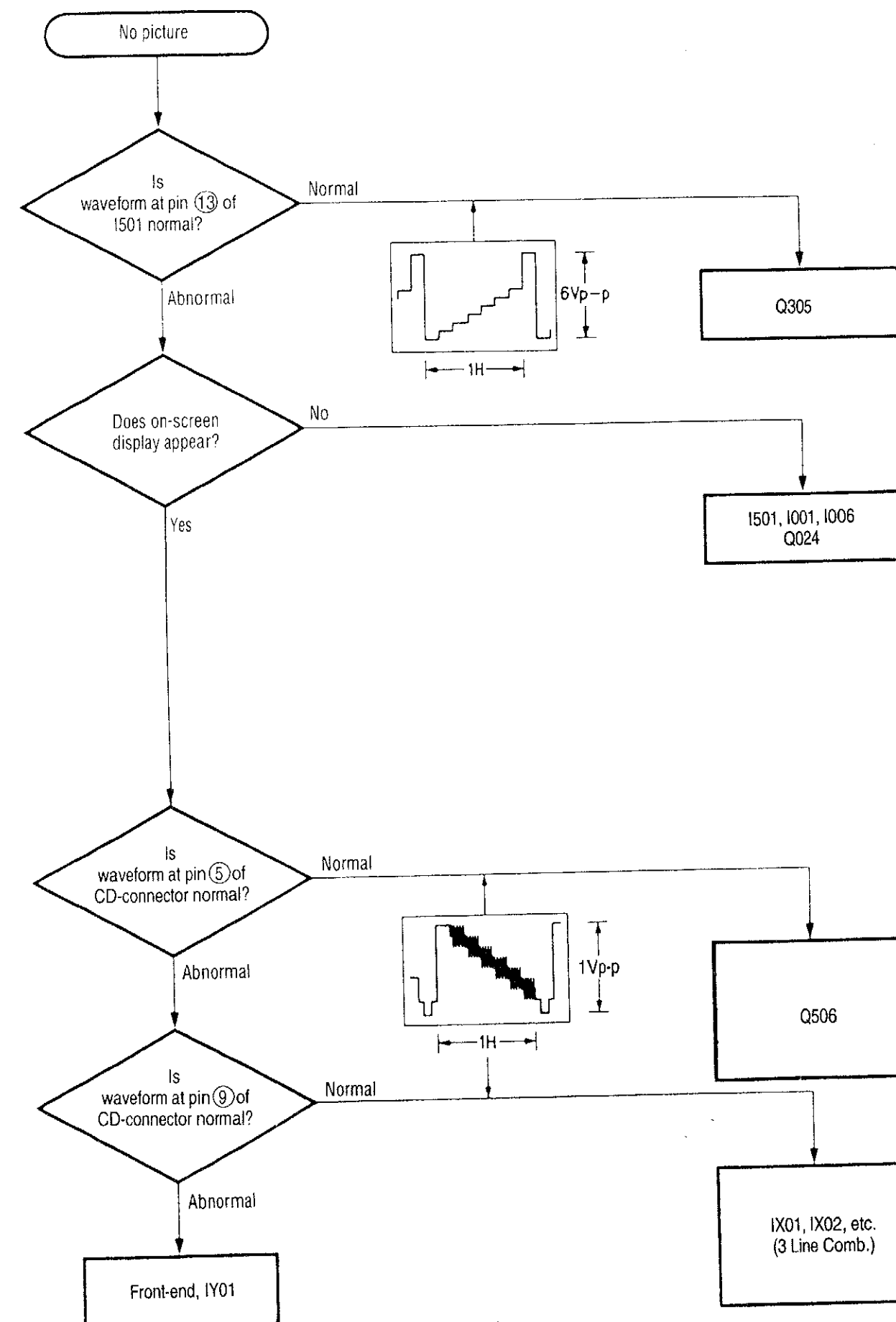
TROUBLESHOOTING

1. No raster

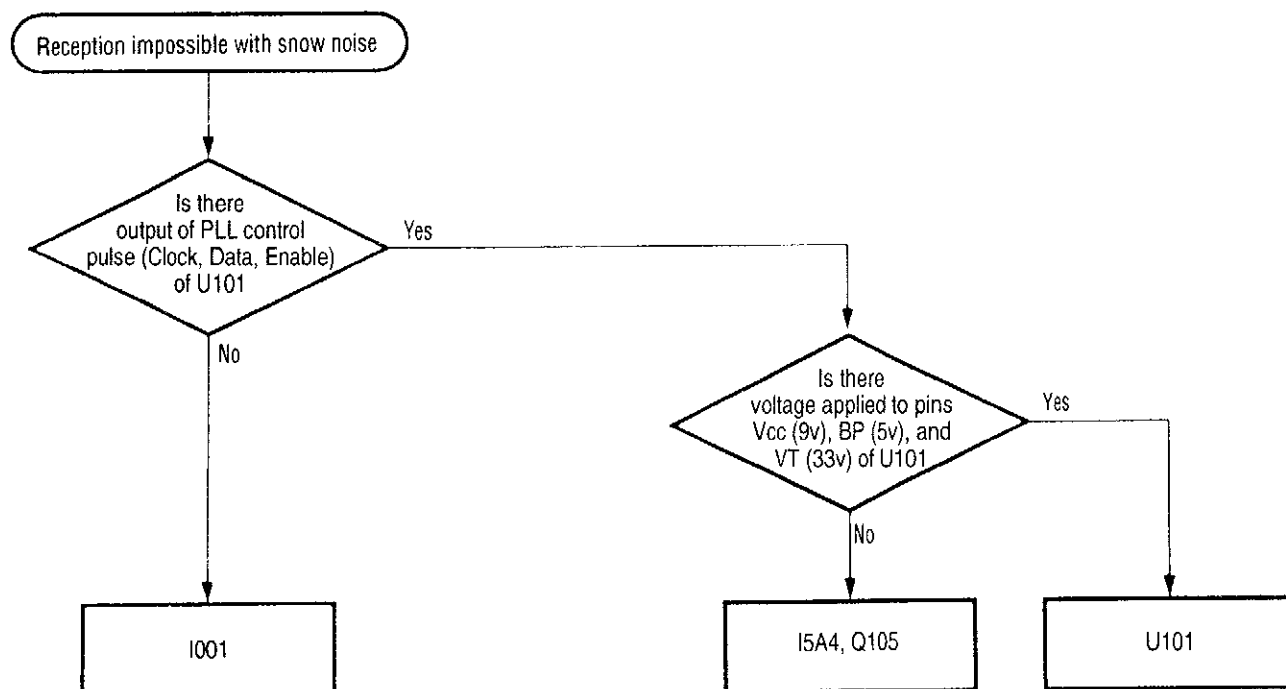




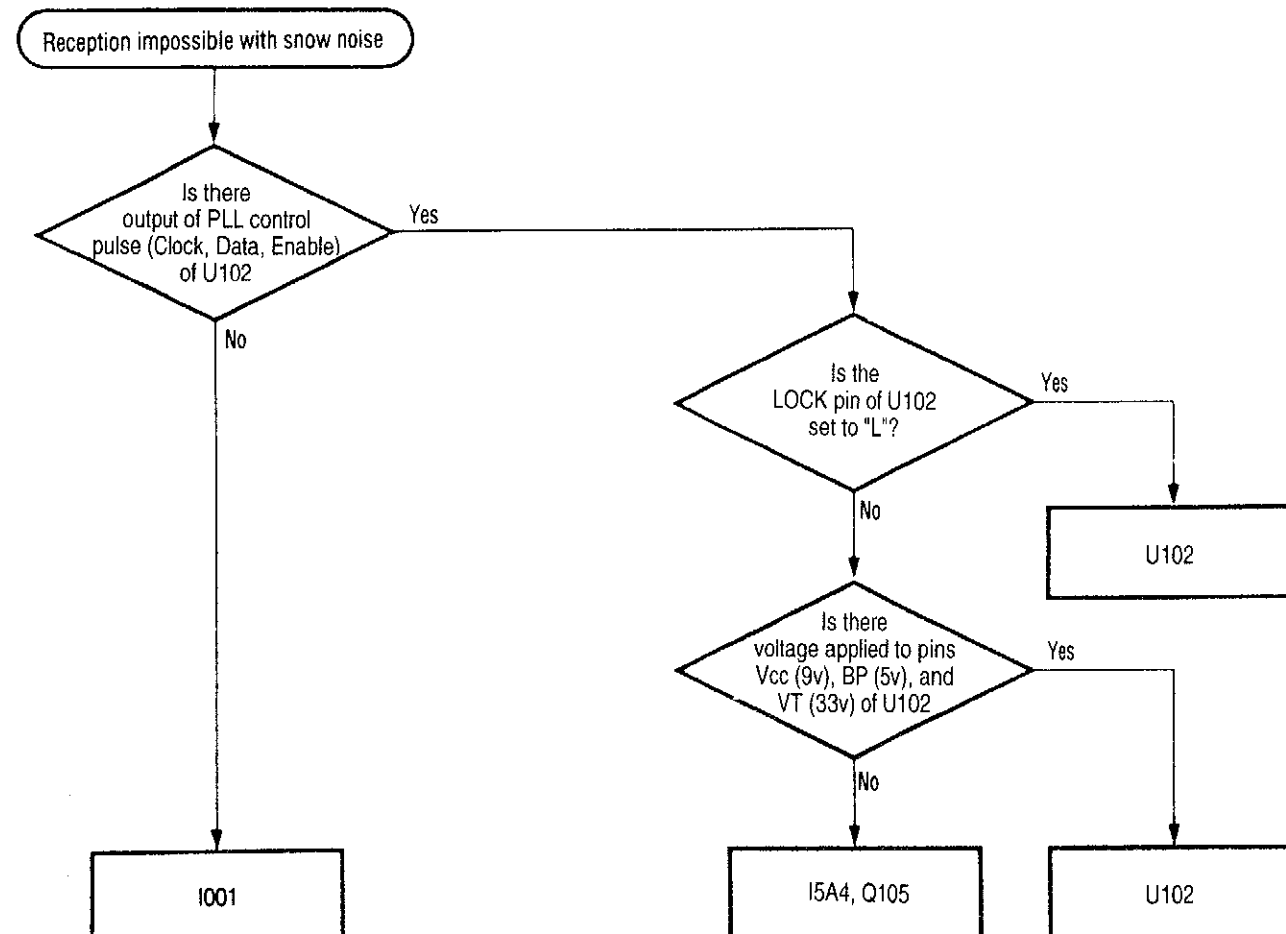
2. No picture



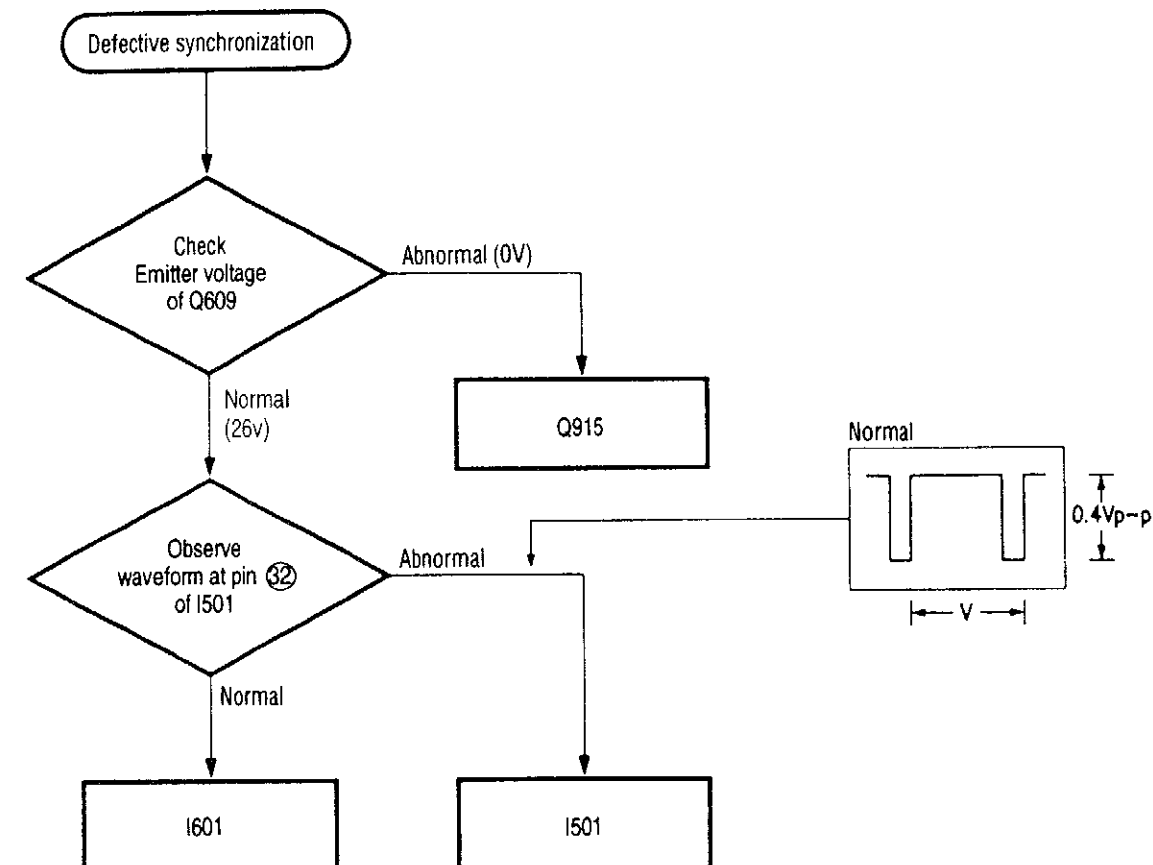
3. Reception impossible with snow noise ANT A - Green Channel OSD



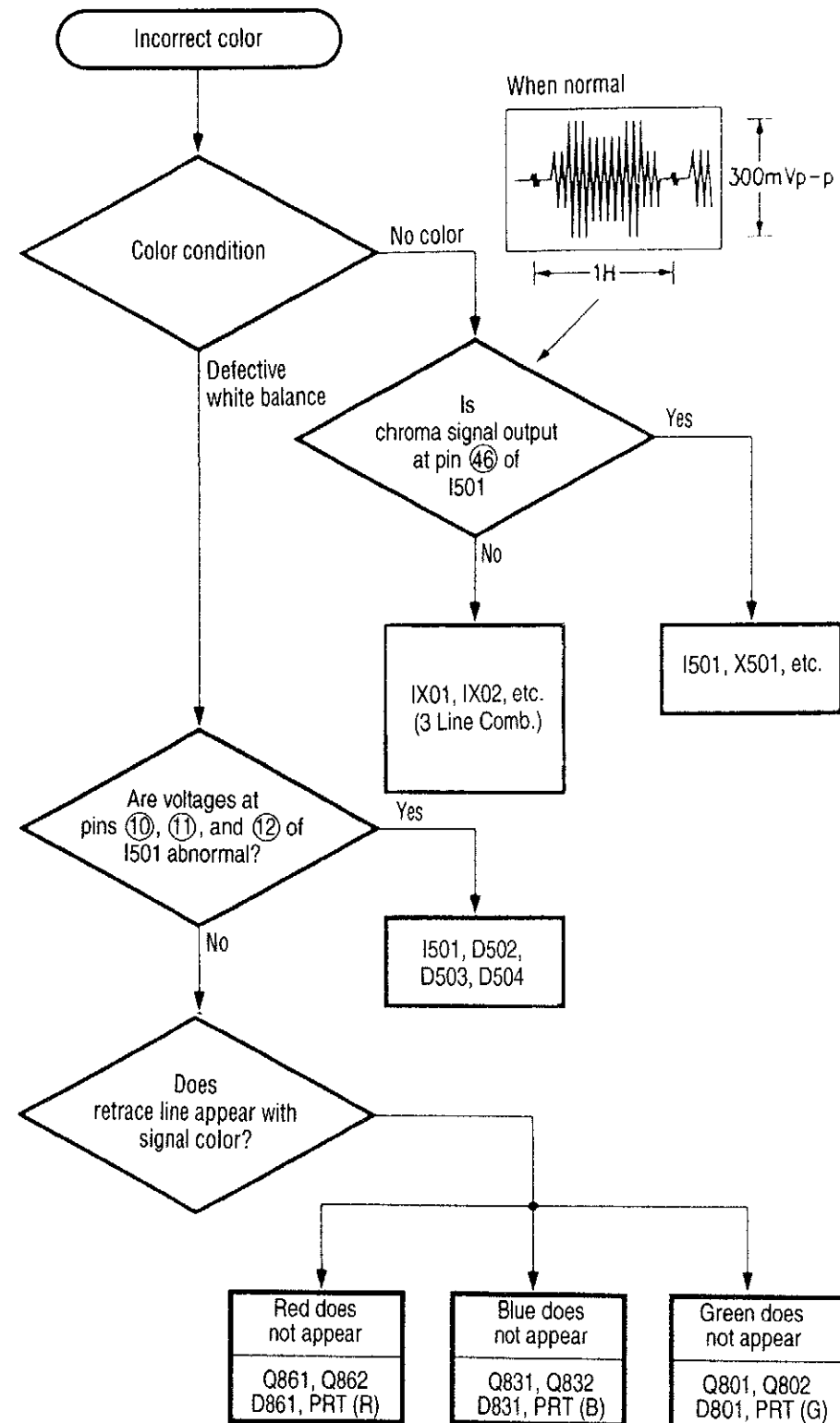
ANT B - Yellow Channel OSD



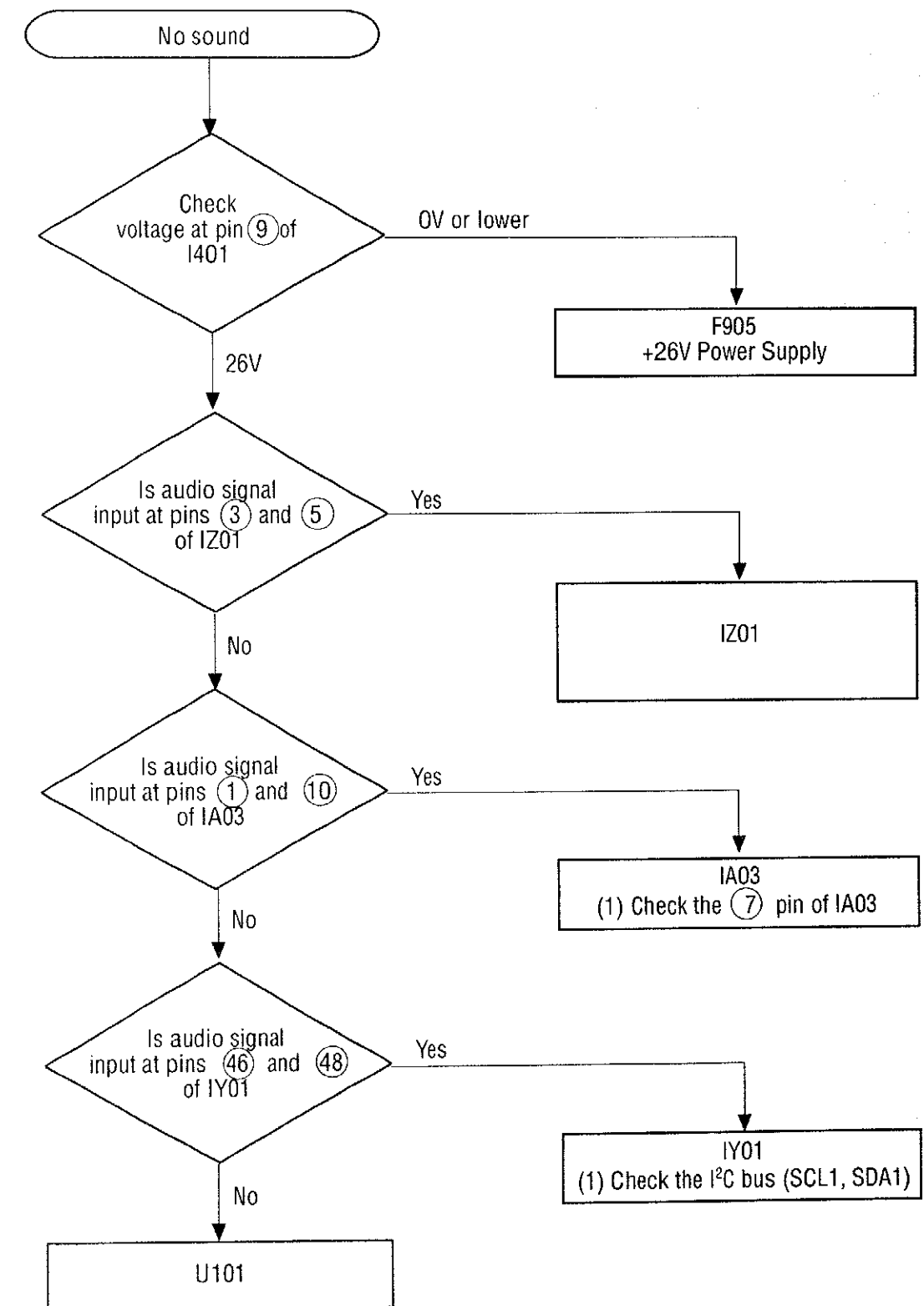
4. Defective synchronization



5. Incorrect color



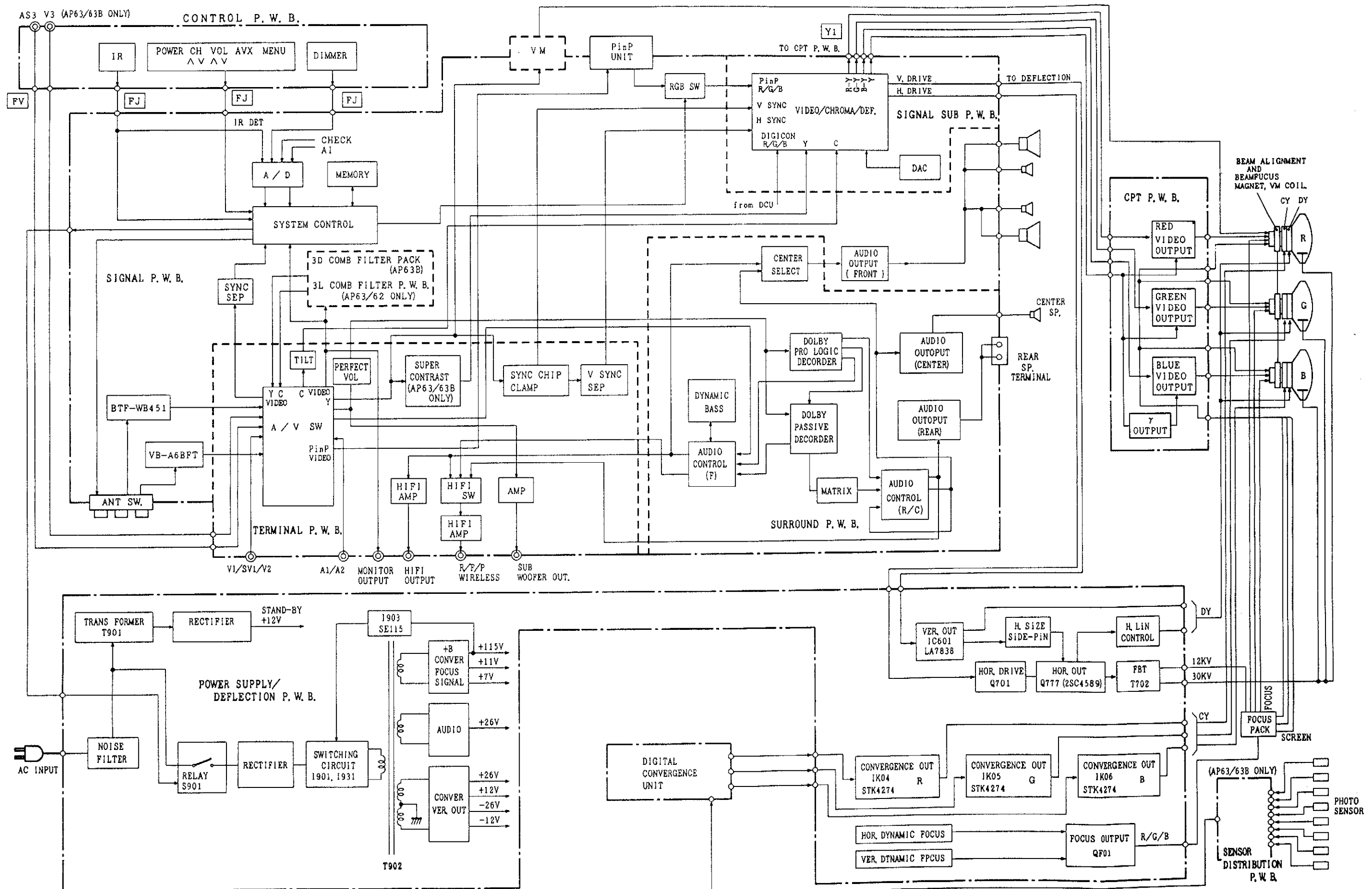
6. No sound



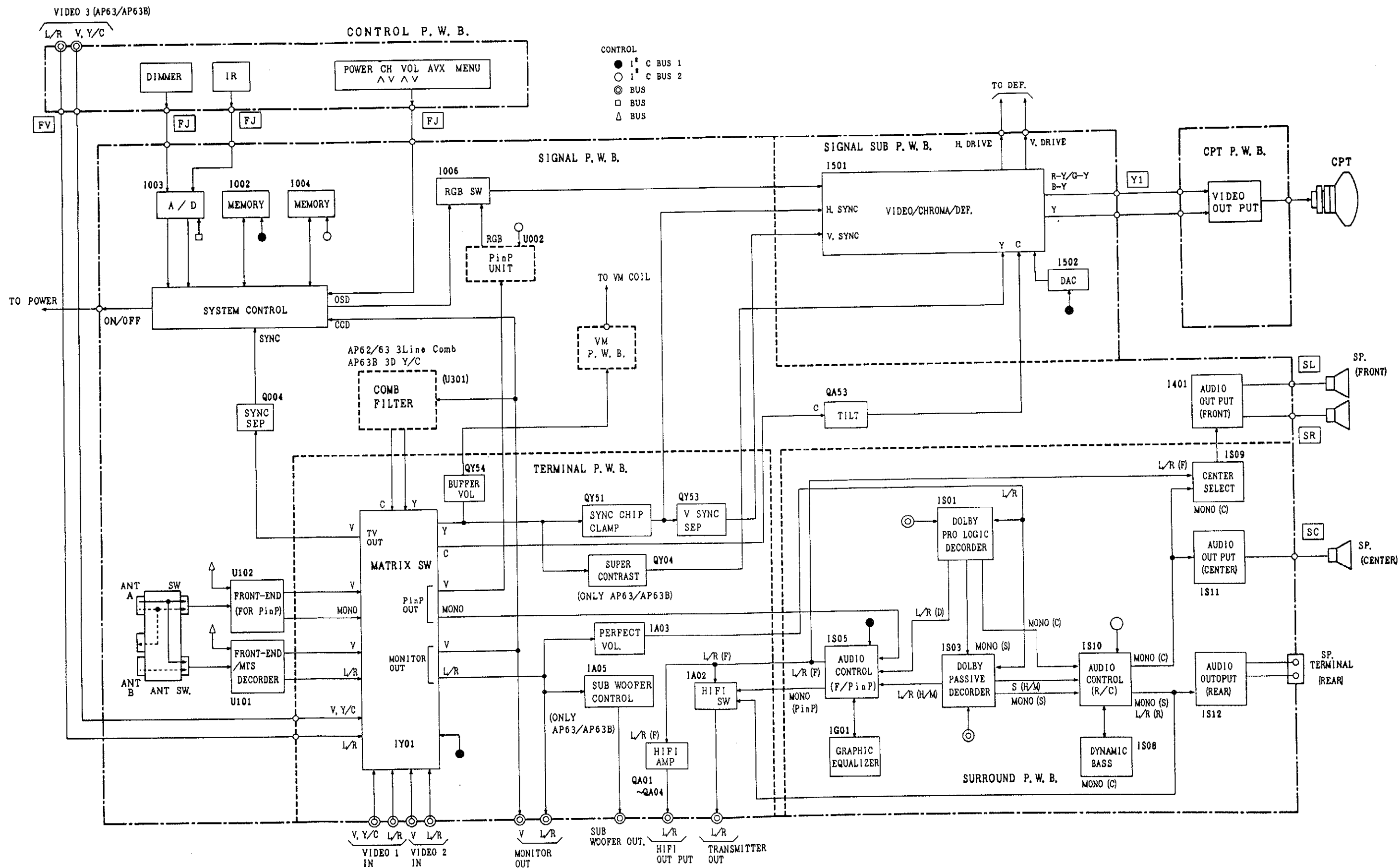
50FX18B
50FX19K
55FX20B



BLOCK DIAGRAM (1/2)



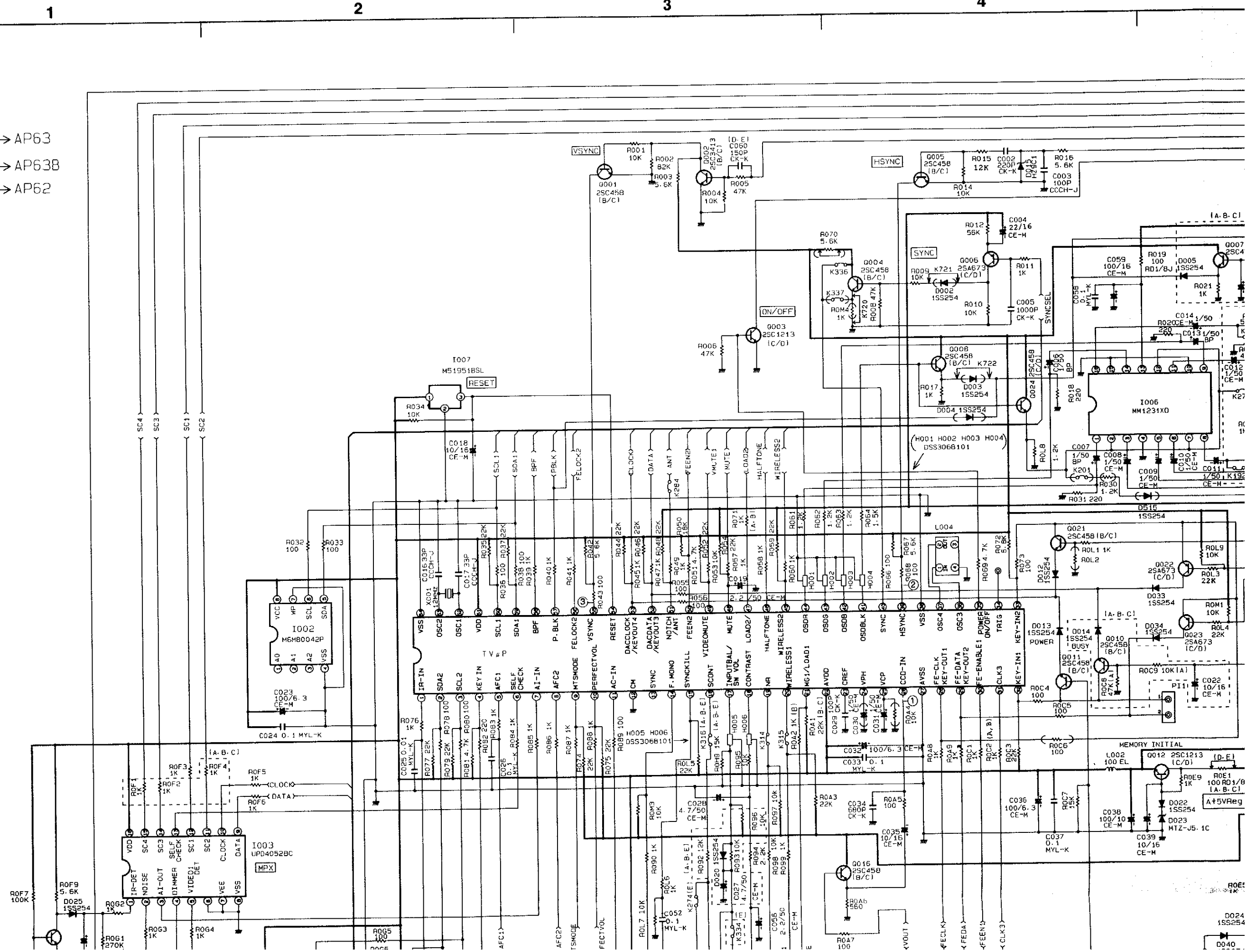
BLOCK DIAGRAM (2/2)



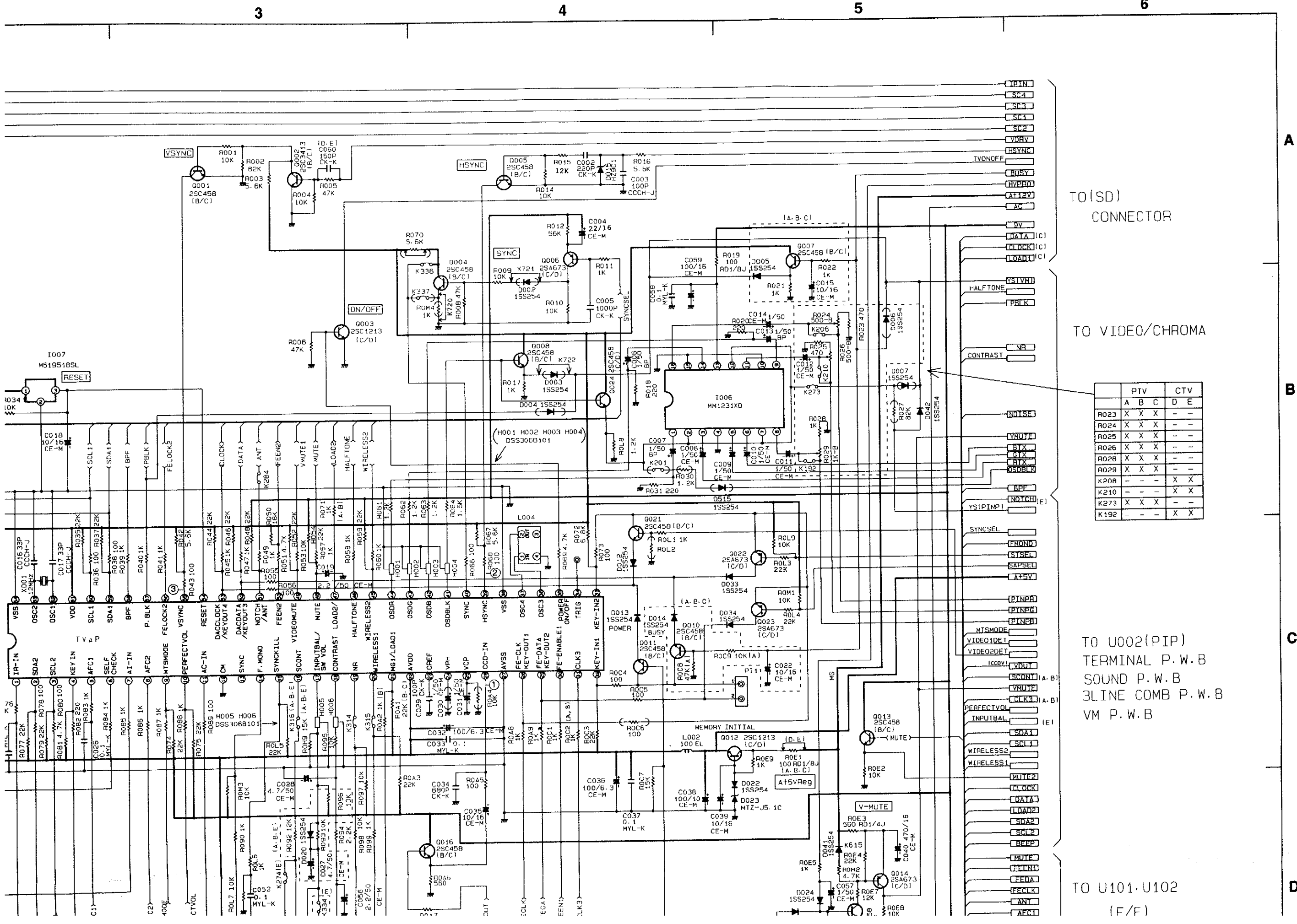
BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Compo safety. Before replacing any of these Manual. Don't degrade the safety of

A → AP63
B → AP63B
C → AP62

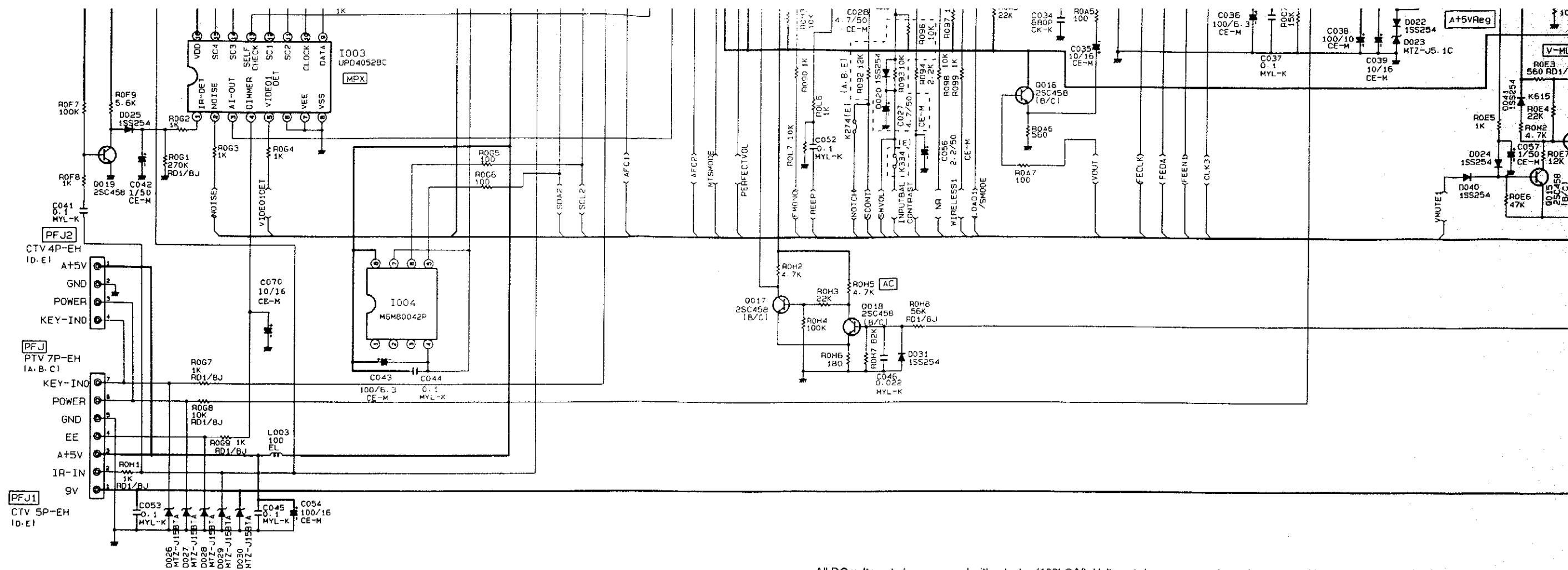


BASIC CIRCUIT DIAGRAM



D

E



- All DC voltage to be measured with a tester (100k Ω /V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

1

2

3

4

5

Circuit No.	Pin No.	Voltage VDC
I001	1	0.1
	2	5.0
	3	5.0
	4	5.0
	5	2.5
	6	0.5
	7	5.0
	8	2.4
	9	0
	10	0
	11	2.4
	12	0
	13	2.5
	14	0.1
	15	0
	16	0
	17	0
	18	7.1
	19	3.0
	20	5.0
	21	0
	22	5.0
	23	0
	24	1.3
	25	1.2
	26	2.1
	27	0
	28	4.8
	29	4.9
	30	0.2
	31	0
	32	5.0

Circuit No.	Pin No.	Voltage VDC
I001	33	3.8
	34	0
	35	5.0
	36	2.6
	37	2.7
	38	0
	39	4.3
	40	4.3
	41	0
	42	0
	43	0
	44	0
	45	0.1
	46	0
	47	0
	48	0.1
	49	0
	50	0
	51	1.0
	52	5.0
	53	5.0
	54	5.0
	55	4.9
	56	5.2
	57	0
	58	5.0
	59	5.0
	60	5.0
	61	5.0
	62	2.5
	63	2.4
	64	0

Circuit No.	Pin No.	Voltage VDC
I002	1	0
	2	0
	3	0
	4	0
	5	5.0
	6	5.0
	7	0
	8	5.0

Circuit No.	Pin No.	Voltage VDC
I003	1	0
	2	3.7
	3	5.0
	4	5.0
	5	0
	6	0
	7	0
	8	0
	9	5.0
	10	5.0
	11	0
	12	0
	13	0
	14	0
	15	0
	16	5.0

Circuit No.	Pin No.	Voltage VDC
I004	1	0
	2	0
	3	0
	4	0
	5	5.0
	6	5.0
	7	0
	8	5.0

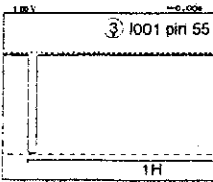
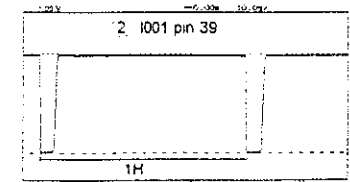
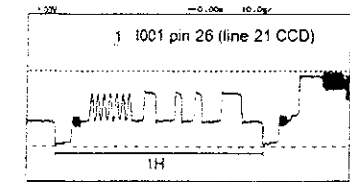
Circuit No.	Pin No.	Voltage VDC
I006	1	4.4
	2	0
	3	3.6
	4	0
	5	3.6
	6	3.6
	7	0
	8	4.4
	9	4.4
	10	0
	11	4.4
	12	0
	13	7.8
	14	4.4
	15	0
	16	4.4

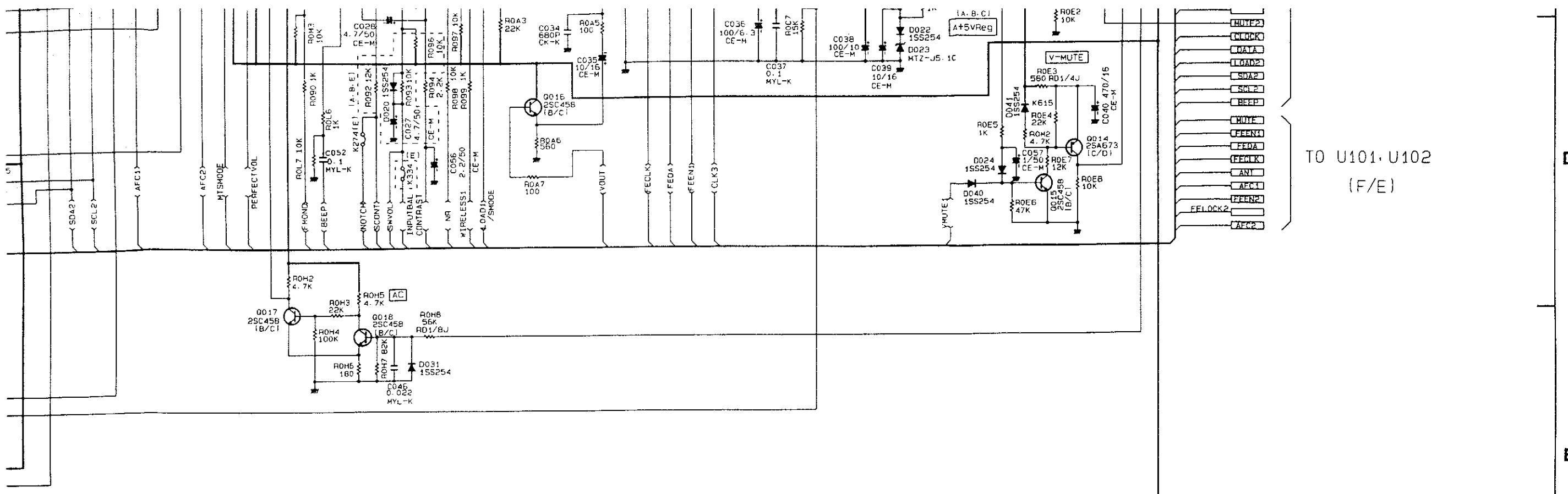
Circuit No.	Pin No.	Voltage VDC
I007	1	5.0
	2	0
	3	5.0

Circuit No.	Pin No.	Voltage VDC
Q001	B	0.1
	C	4.9
	E	0
	B	0.6
	C	0.2
	E	0
	B	0.7
	C	0.1
	E	0
	B	0.1
Q002	C	4.3
	E	0
	B	-0.1
	C	4.3
	E	0
	B	4.5
	C	0.4
	E	4.4
	B	0
	C	5.0
Q003	E	0
	B	0
	C	5.0
	E	0
	B	0
	C	5.0
	E	0
	B	0
	C	5.0
	E	0.1

Circuit No.	Pin No.	Voltage VDC
Q011	B	0
	C	5.0
	E	0.1
	B	5.7
	C	8.6
	E	5.1
	B	0.1
	C	9.1
	E	0
	B	12.5
Q012	C	0
	E	12.5
	B	0
	C	12.5
	E	0
	B	3.8
	C	9.0
	E	3.1
	B	0.6
	C	2.4
Q013	E	0.2
	B	0.4
	C	2.4
	E	0.2
	B	0.7
	C	0.1
	E	0
	B	0
	C	0.1
	E	0

Circuit No.	Pin No.	Voltage VDC
Q021	B	0
	C	3.8
	E	0.1
	B	3.2
	C	3.8
	E	3.8
	B	3.2
	C	3.8
Q022	E	3.8
	B	0
	C	5.0
	E	0
	B	0
	C	5.0
	E	0
	B	0

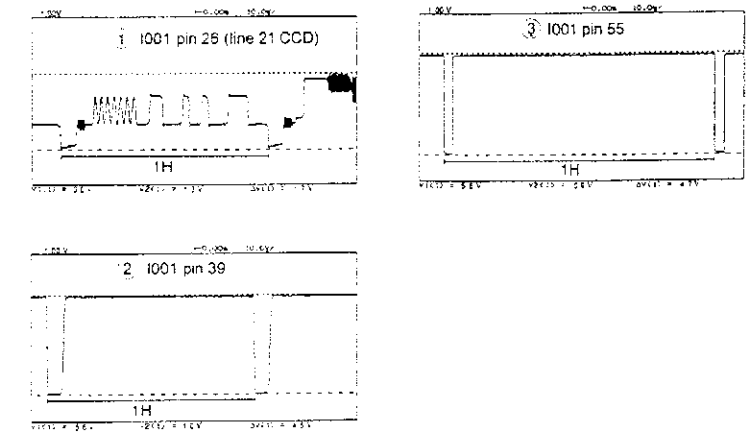




• All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
 • Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

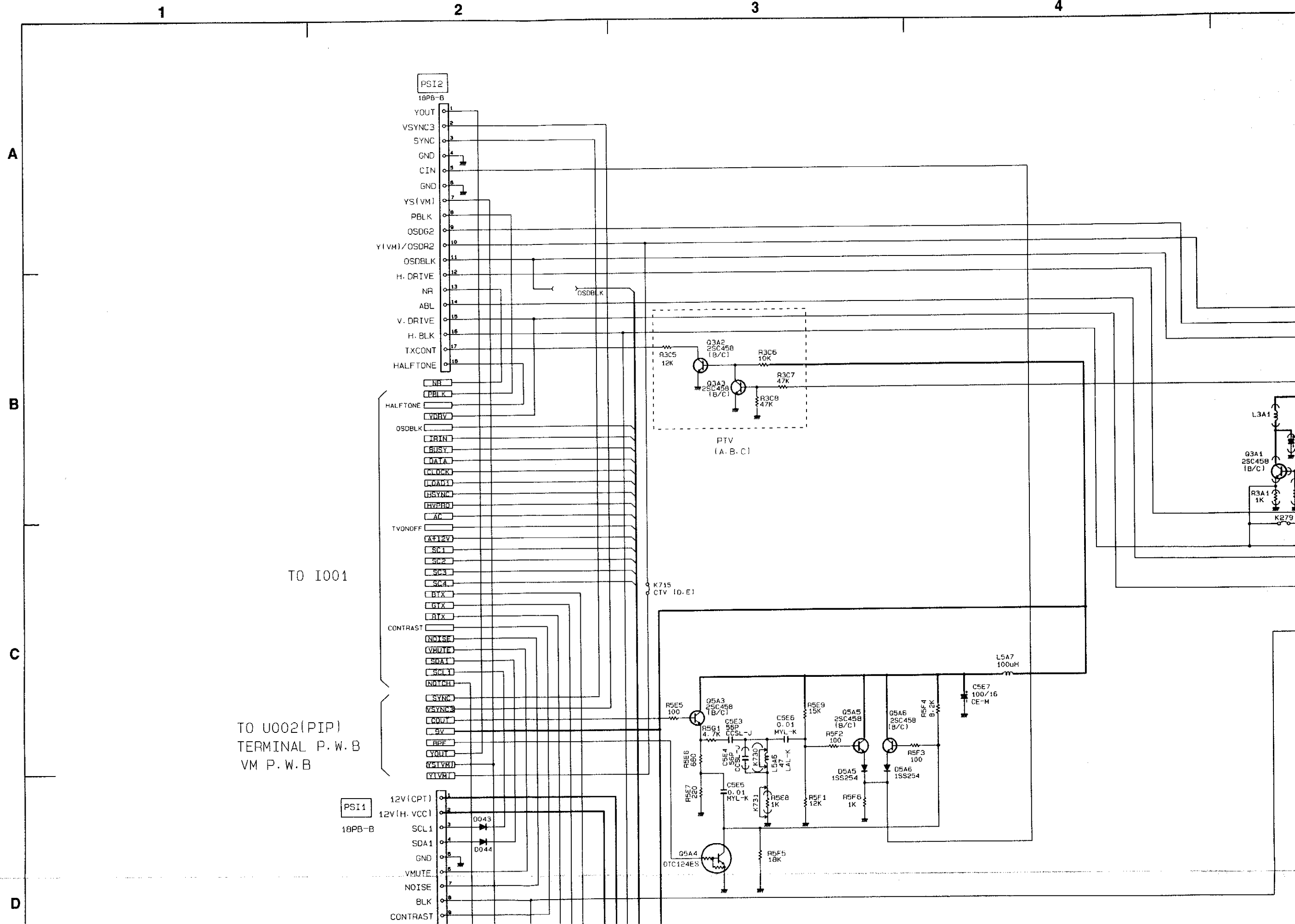
AP62 SIGNAL P.W.B. (1/3)

3			4		
Circuit No.	Pin No.	Voltage VDC	Circuit No.	Pin No.	Voltage VDC
I001	33	3.8	I002	1	0
	34	0		2	0
	35	5.0		3	0
	36	2.8		4	0
	37	2.7		5	5.0
	38	0		6	5.0
	39	4.3		7	0
	40	4.3		8	5.0
	41	0	I003	1	0
	42	0		2	3.7
	43	0		3	5.0
	44	0		4	5.0
	45	0.1		5	0
	46	0		6	0
	47	0		7	0
	48	0.1		8	0
	49	0	I004	1	4.4
	50	0		2	0
	51	1.0		3	3.6
	52	5.0		4	0
	53	5.0		5	3.6
	54	5.0		6	3.6
	55	4.8		7	0
	56	5.2		8	4.4
I005	57	0	I006	9	4.4
	58	5.0		10	0
	59	5.0		11	4.4
	60	5.0		12	0
	61	5.0		13	7.8
	62	2.5		14	4.4
	63	2.4		15	0
	64	0		16	4.4
5			6		
Circuit No.	Pin No.	Voltage VDC	Circuit No.	Pin No.	Voltage VDC
Q001	B	0	Q021	B	0
	C	4.9		C	3.8
	E	0		E	0.1
Q002	B	0.6	Q022	B	3.2
	C	0.2		C	3.8
	E	0		E	3.8
Q003	B	0.7	Q023	B	3.2
	C	0.1		C	3.8
	E	0		E	3.8
Q004	B	0.1	Q024	B	0
	C	4.3		C	5.0
	E	0		E	0
Q005	B	-0.1			
	C	4.3			
	E	0			
Q006	B	4.5			
	C	0.4			
	E	4.4			
Q007	B	0			
	C	5.0			
	E	0			
Q008	B	0			
	C	5.0			
	E	0			
Q010	B	0			
	C	5.0			
	E	0.1			



BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Co
safety. Before replacing any of t
Manual. Don't degrade the safe

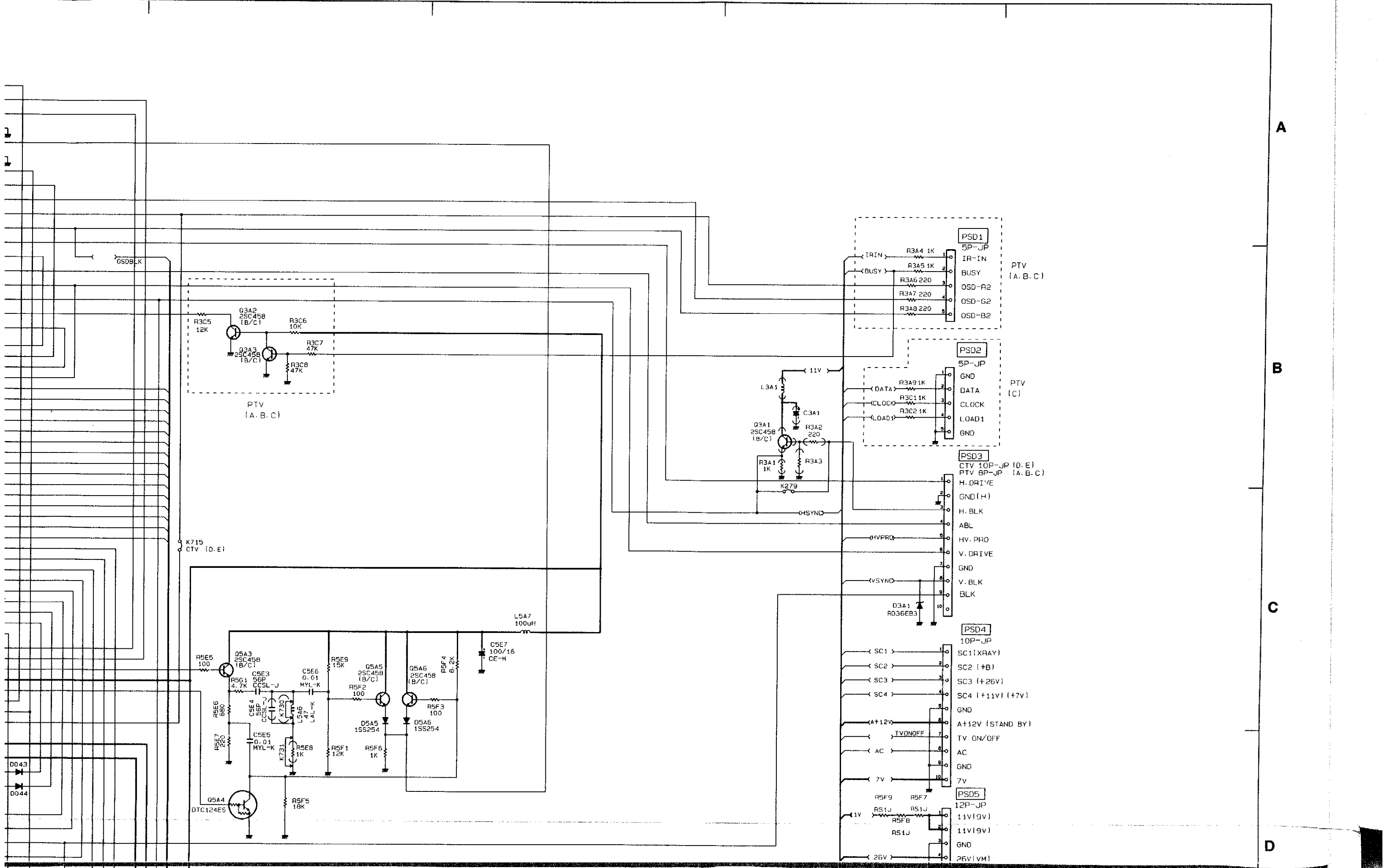


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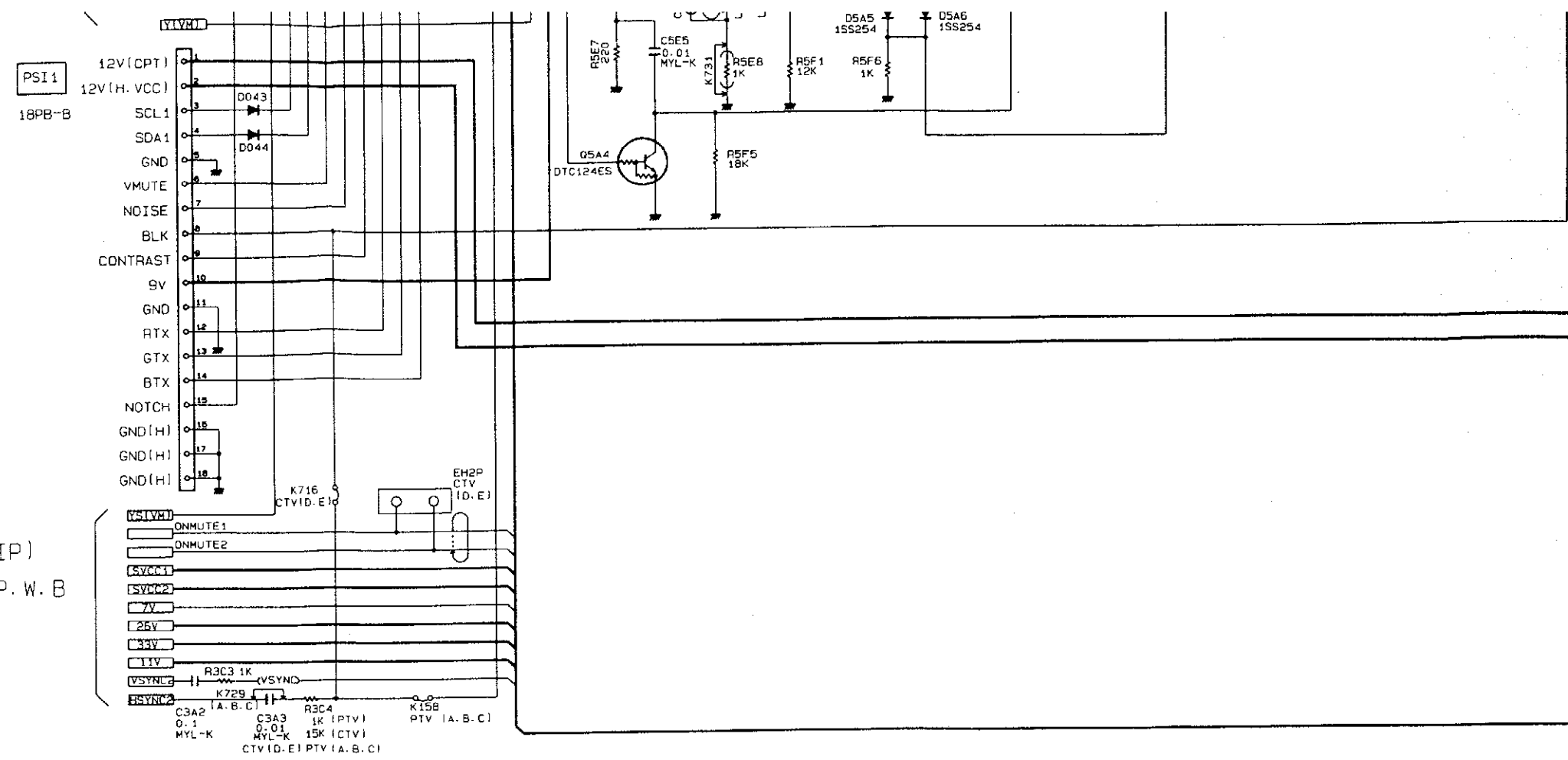
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D

E

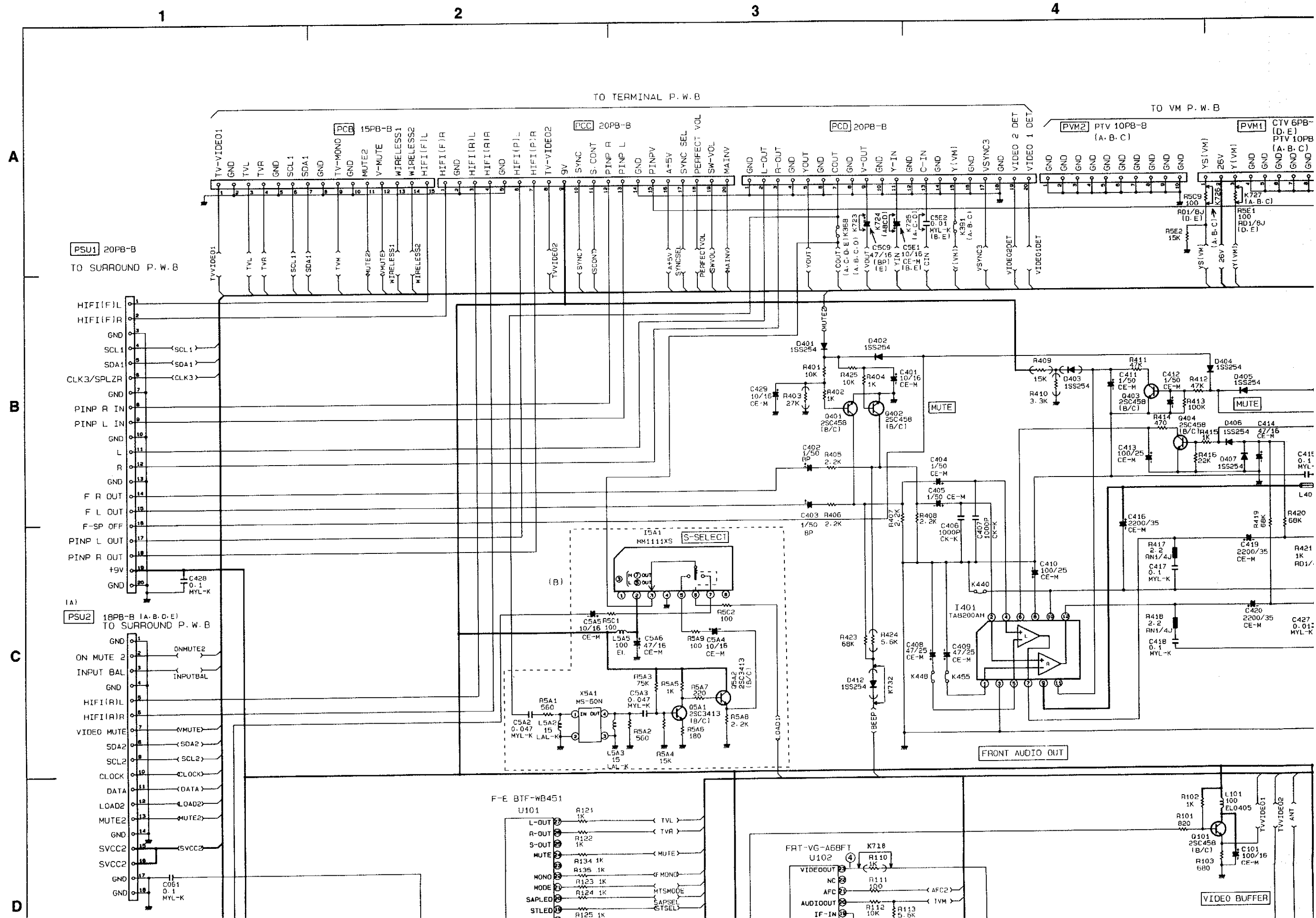
TO U002(PIP)
TERMINAL P.W.B
VM P.W.B



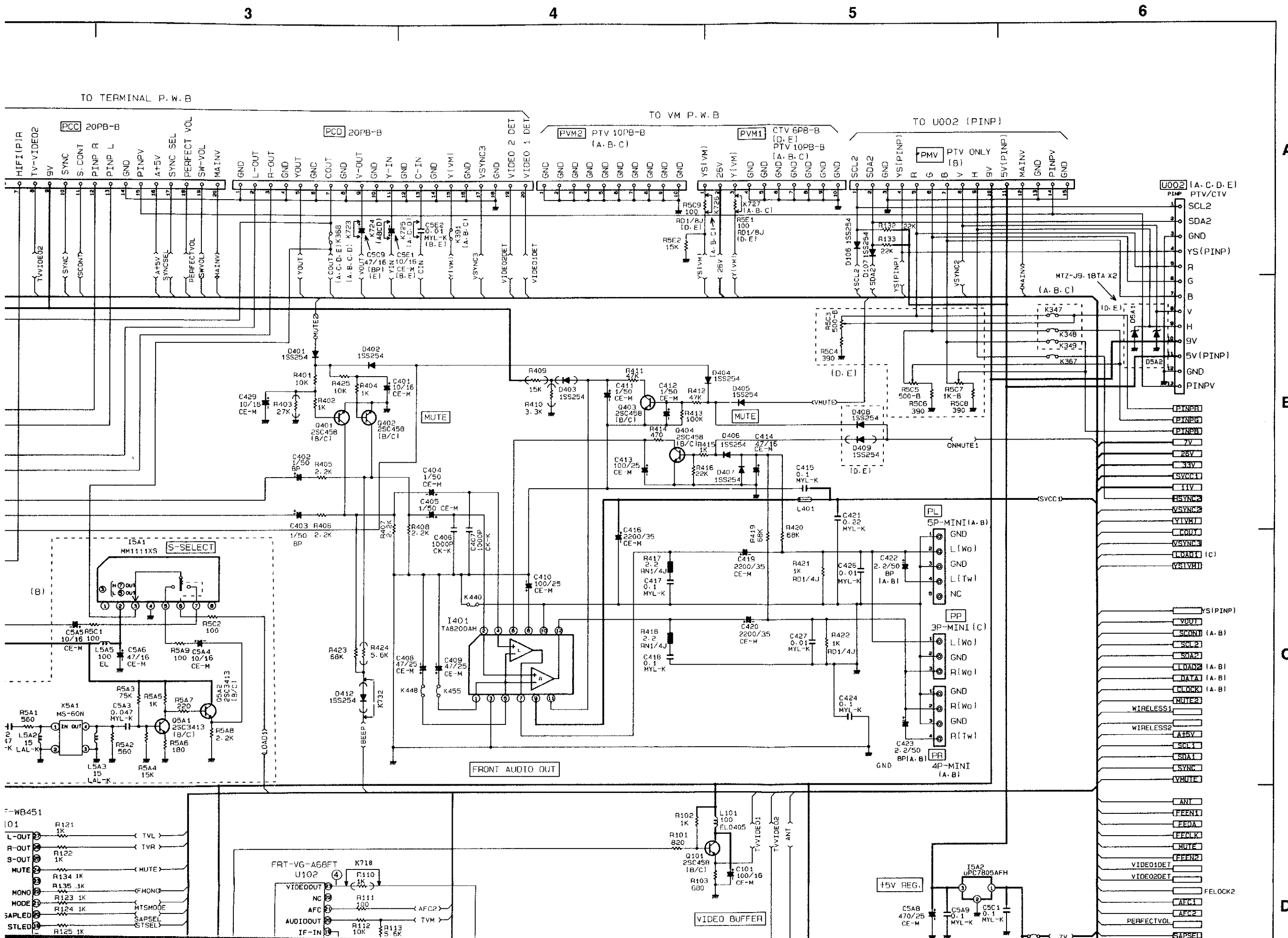
• All DC voltage to be measured with a
• Since this is a basic circuit diagram, th

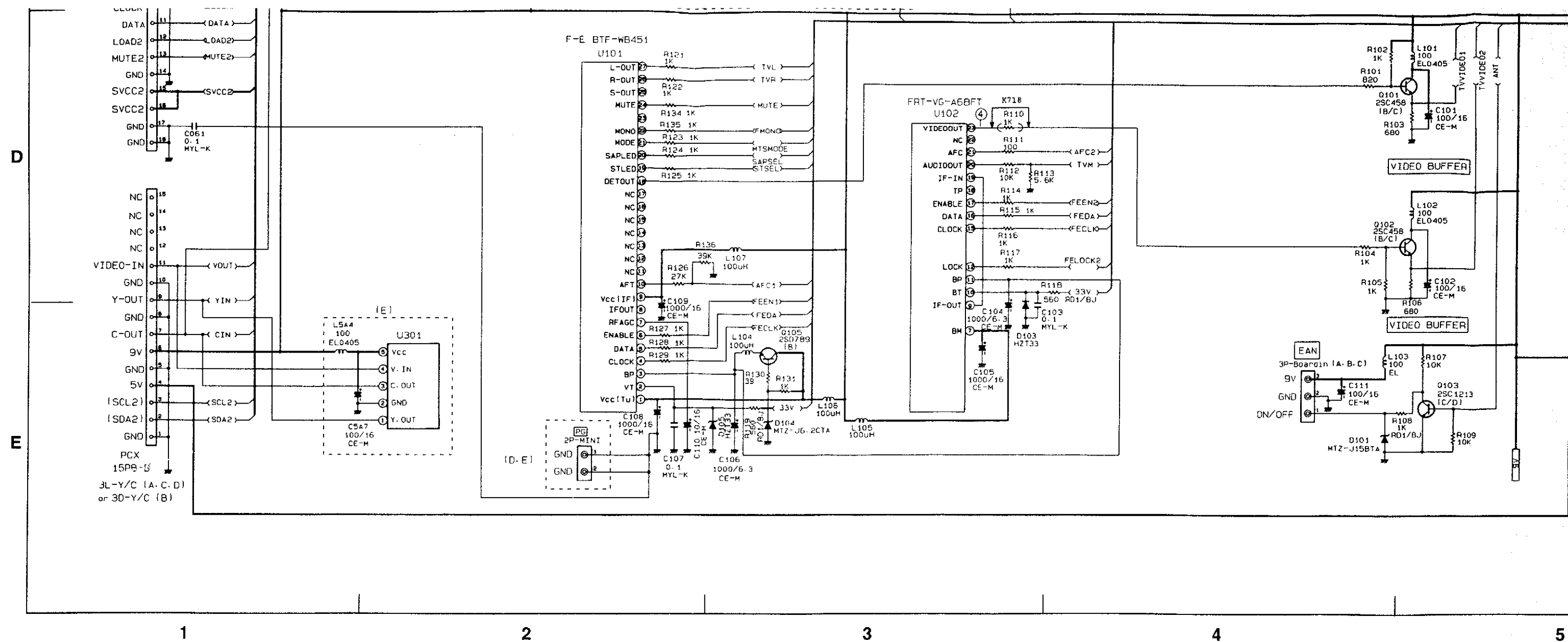
Circuit No.	Pin No.	Voltage VDC
Q3A2	B	0.7
	C	0
	E	0
Q3A3	B	0
	C	0.7
	E	0
Q5A3	B	3.8
	C	9.1
	E	3.1
Q5A4	B	4.8
	C	0
	E	0
Q5A5	B	3.9
	C	9.1
	E	3.3
Q5A6	B	0
	C	9.1
	E	0.1

PRODUCT SAFETY NOTE: Components are for personal safety. Before replacing any of these components, read the User Manual. Don't degrade the safety of the product.



BASIC CIRCUIT DIAGRAM





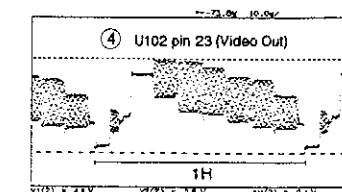
Circuit No.	Pin No.	Voltage VDC
1401	1	1.6
	2	0
	3	0
	4	0
	5	1.6
	6	9.1
	7	12.7
	8	5.0
	9	27.1
	10	0
	11	4.2
	12	12.4

Circuit No.	Pin No.	Voltage VDC
15A2	1	8.3
	2	0
	3	5.0

Circuit No.	Pin No.	Voltage VDC
15A3	1	8.3
	2	0.3
	3	5.2

Circuit No.	Pin No.	Voltage VDC
15A4	1	11.1
	2	9.1
	3	0
	4	11.1

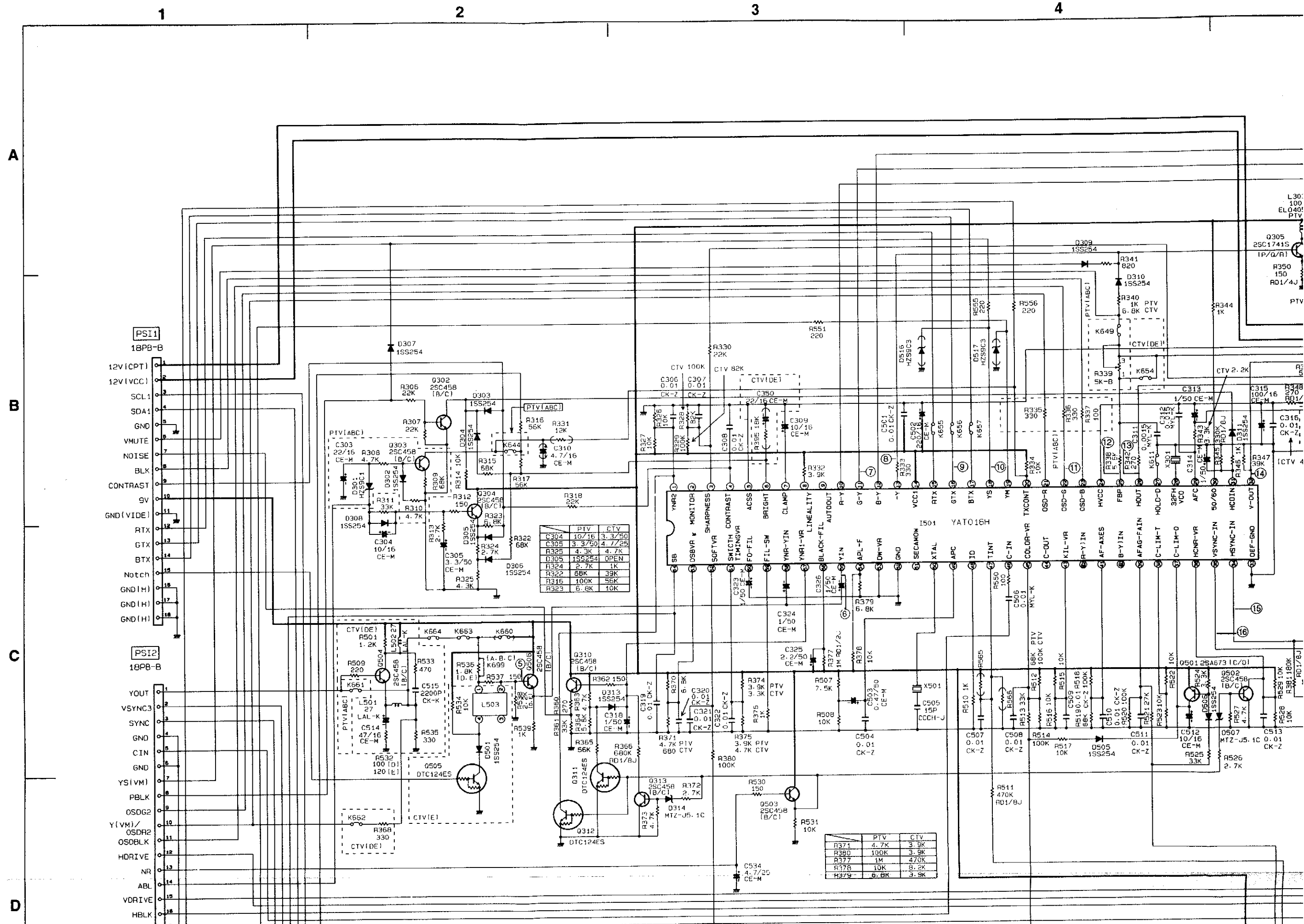
Circuit No.	Pin No.	Voltage VDC
Q101	B	6.6
	C	8.9
	E	5.9
Q102	B	1.6
	C	8.9
	E	1.0
Q103	B	0.6
	C	0
	E	0
Q105	B	6.3
	C	8.8
	E	5.7
Q401	B	0
	C	9.1
	E	0
Q402	B	0.7
	C	0
	E	0
Q403	B	0
	C	4.2
	E	0
Q404	B	0
	C	9.1
	E	0



- All DC voltage to be measured with a
- Since this is a basic circuit diagram,

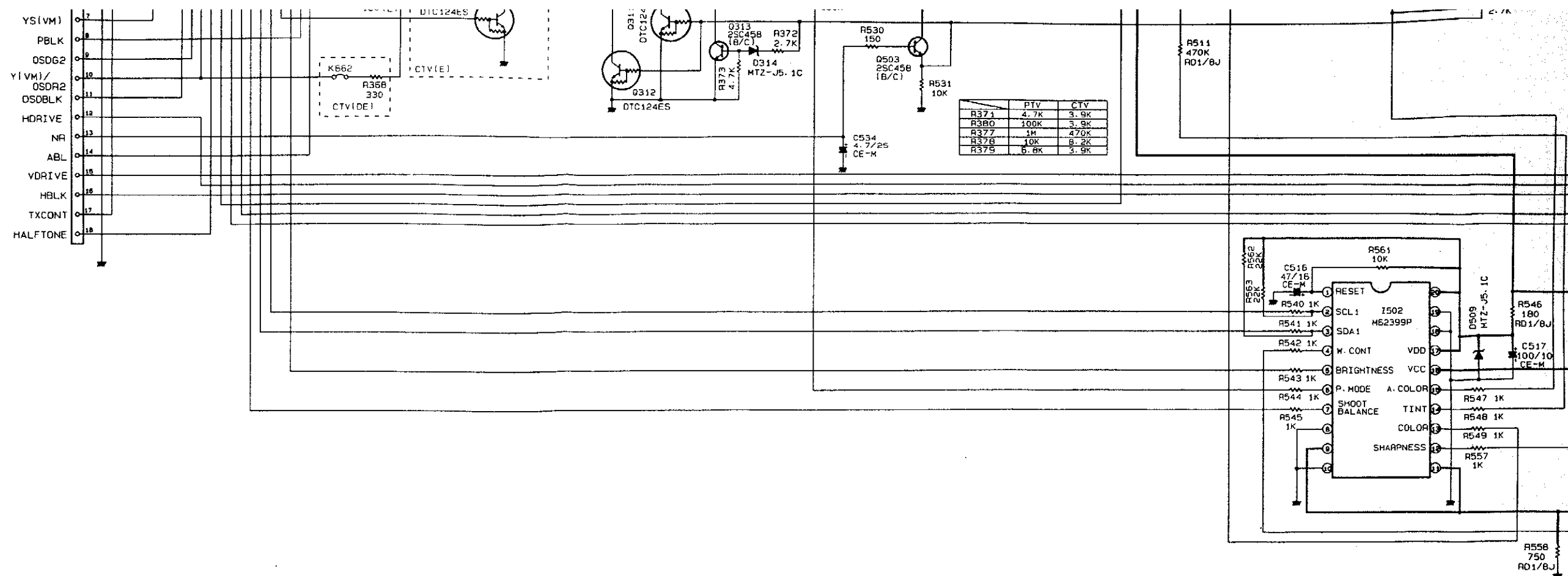
SIGNAL 3/3
SIGNAL SUB

BASIC CIRCUIT DIAGRAM



D

E



- All DC voltage to be measured with a tester (100k Ω /V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

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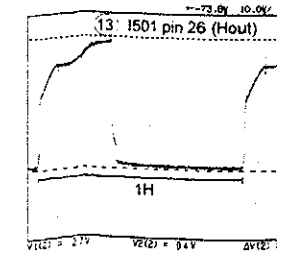
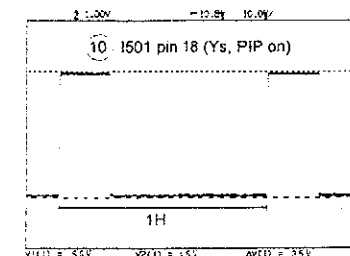
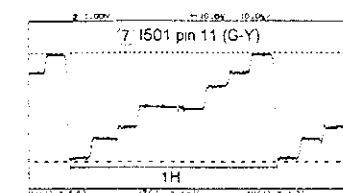
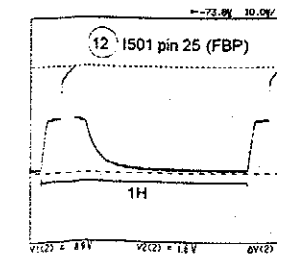
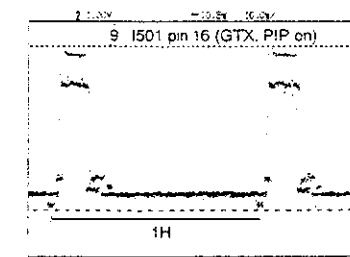
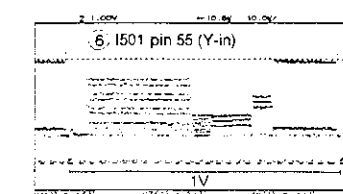
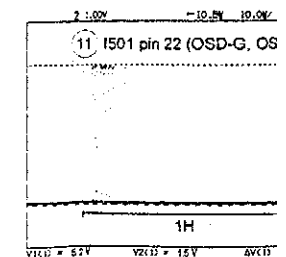
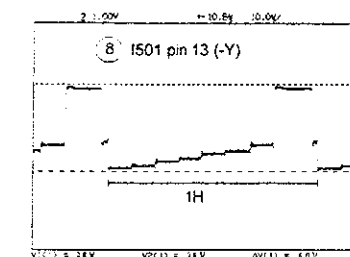
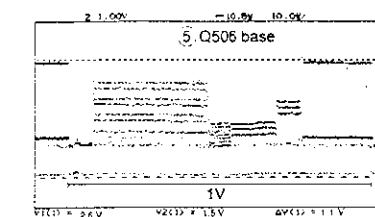
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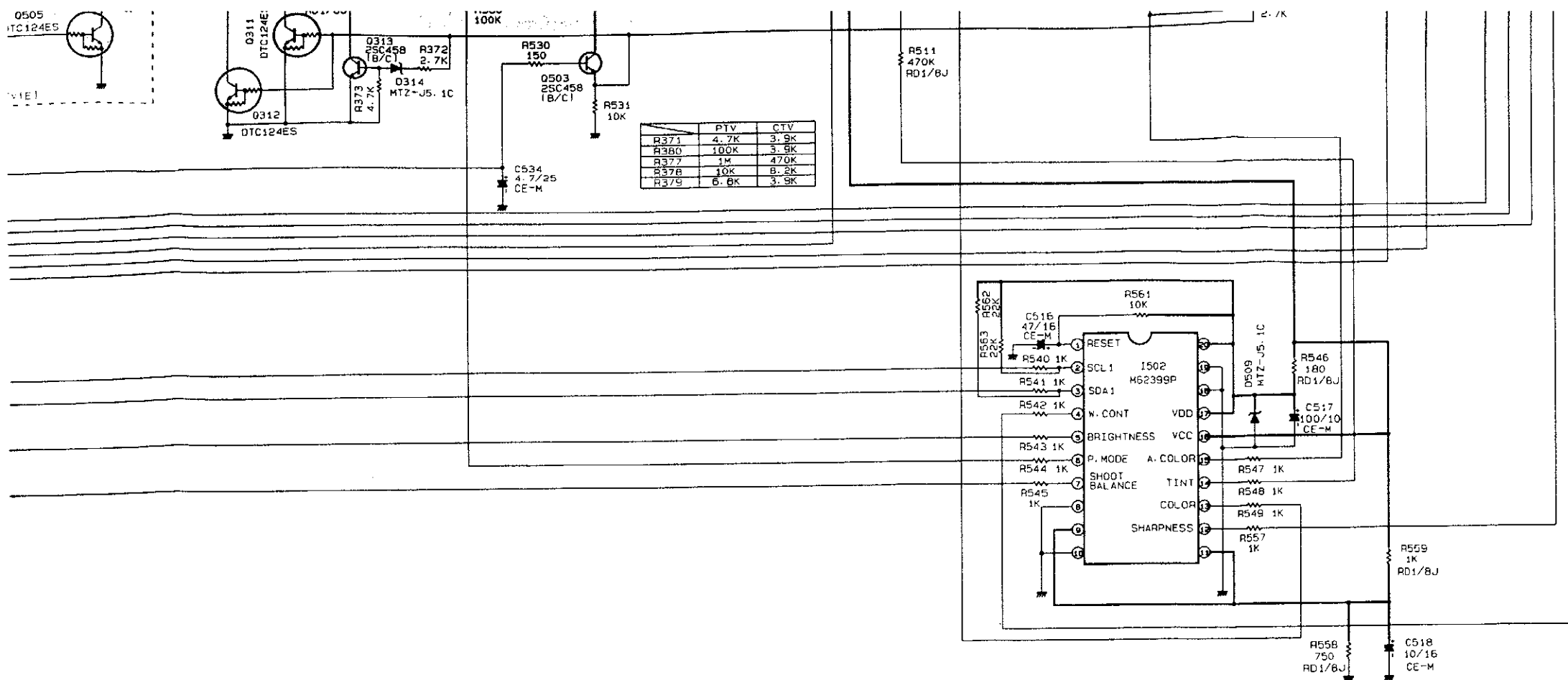
Circuit No.	Pin No.	Voltage VDC
I501	1	0
	2	0
	3	4.3
	4	7.0
	5	0
	6	4.8
	7	6.9
	8	8.9
	9	0.1
	10	5.1
	11	5.2
	12	5.3
	13	4.4
	14	9.0
	15	3.1
	16	3.1
	17	3.1
	18	0
	19	0
	20	4.9
	21	0
	22	0
	23	0
	24	7.8
	25	1.3
	26	0.8
	27	0
	28	5.0
	29	5.6
	30	8.7
	31	7.5
	32	4.4

Circuit No.	Pin No.	Voltage VDC
I501	33	0
	34	7.0
	35	6.4
	36	0
	37	9.0
	38	4.0
	39	1.8
	40	1.3
	41	3.6
	42	1.3
	43	4.1
	44	6.5
	45	4.7
	46	3.1
	47	4.5
	48	0.7
	49	5.8
	50	5.5
	51	1.4
	52	0
	53	0
	54	3.6
	55	3.7
	56	6.0
	57	4.4
	58	3.8
	59	0
	60	4.2
	61	4.5
	62	6.0
	63	3.7
	64	5.7

Circuit No.	Pin No.	Voltage VDC
I502	1	5.3
	2	5.2
	3	5.2
	4	0
	5	5.8
	6	8.8
	7	5.7
	8	0
	9	3.7
	10	0
	11	3.7
	12	4.4
Q302	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
	8	0
	9	0
	10	0
	11	0
	12	0
Q303	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
	8	0
	9	0
	10	0
	11	0
	12	0
Q304	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
	8	0
	9	0
	10	0
	11	0
	12	0
Q305	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
	8	0
	9	0
	10	0
	11	0
	12	0
Q310	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
	8	0
	9	0
	10	0
	11	0
	12	0
Q311	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
	8	0
	9	0
	10	0
	11	0
	12	0
Q312	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
	8	0
	9	0
	10	0
	11	0
	12	0
Q313	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
	8	0
	9	0
	10	0
	11	0
	12	0

Circuit No.	Pin No.	Voltage VDC
Q501	B	8.4
	C	9.0
	E	9.0
	B	0.7
	C	0
	E	0
Q502	B	8.8
	C	9.0
	E	8.1
	B	2.2
	C	9.0
	E	1.5
Q503	B	8.8
	C	9.0
	E	8.1
	B	2.2
	C	9.0
	E	1.5
Q506	B	8.8
	C	9.0
	E	8.1
	B	2.2
	C	9.0
	E	1.5





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- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

AP62 SIGNAL SUB P.W.B.

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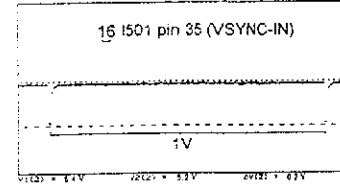
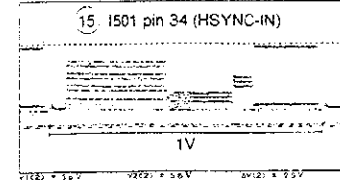
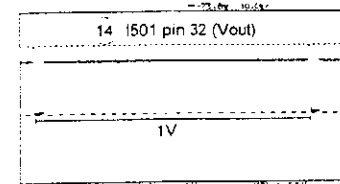
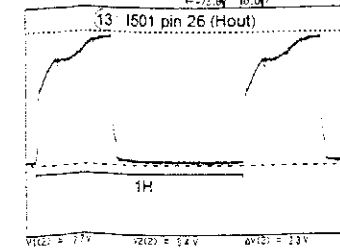
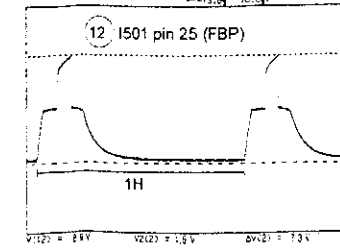
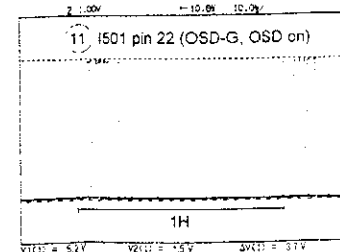
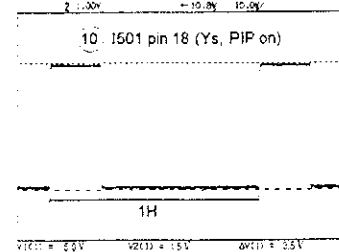
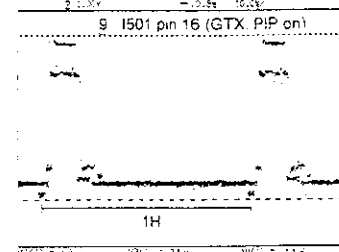
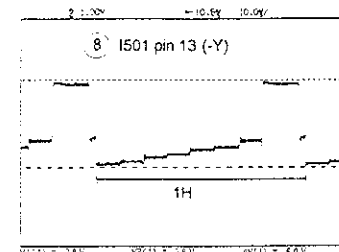
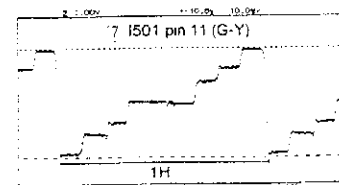
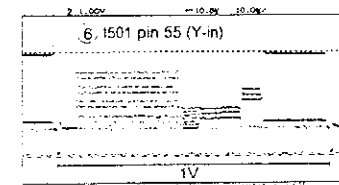
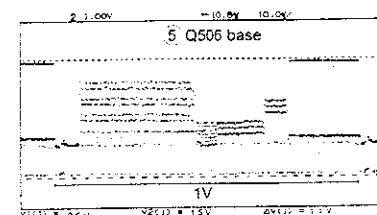
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Pin No.	Voltage VDC
33	0
34	7.0
35	8.4
36	0
37	9.0
38	4.0
39	1.8
40	1.3
41	3.6
42	1.3
43	4.1
44	6.5
45	4.7
46	3.1
47	4.5
48	0.7
49	5.8
50	5.5
51	1.4
52	0
53	0
54	3.6
55	3.7
56	6.0
57	4.4
58	3.8
59	0
60	4.2
61	4.5
62	6.0
63	3.7
64	5.7

Circuit No.	Pin No.	Voltage VDC
I502	1	5.3
	2	5.2
	3	5.2
	4	0
	5	5.8
	6	8.8
	7	5.7
	8	0
	9	3.7
	10	0
	11	3.7
	12	4.4
	13	4.4
	14	4.5
	15	8.8
	16	9.0
	17	5.3
	18	0
	19	0
	20	5.3

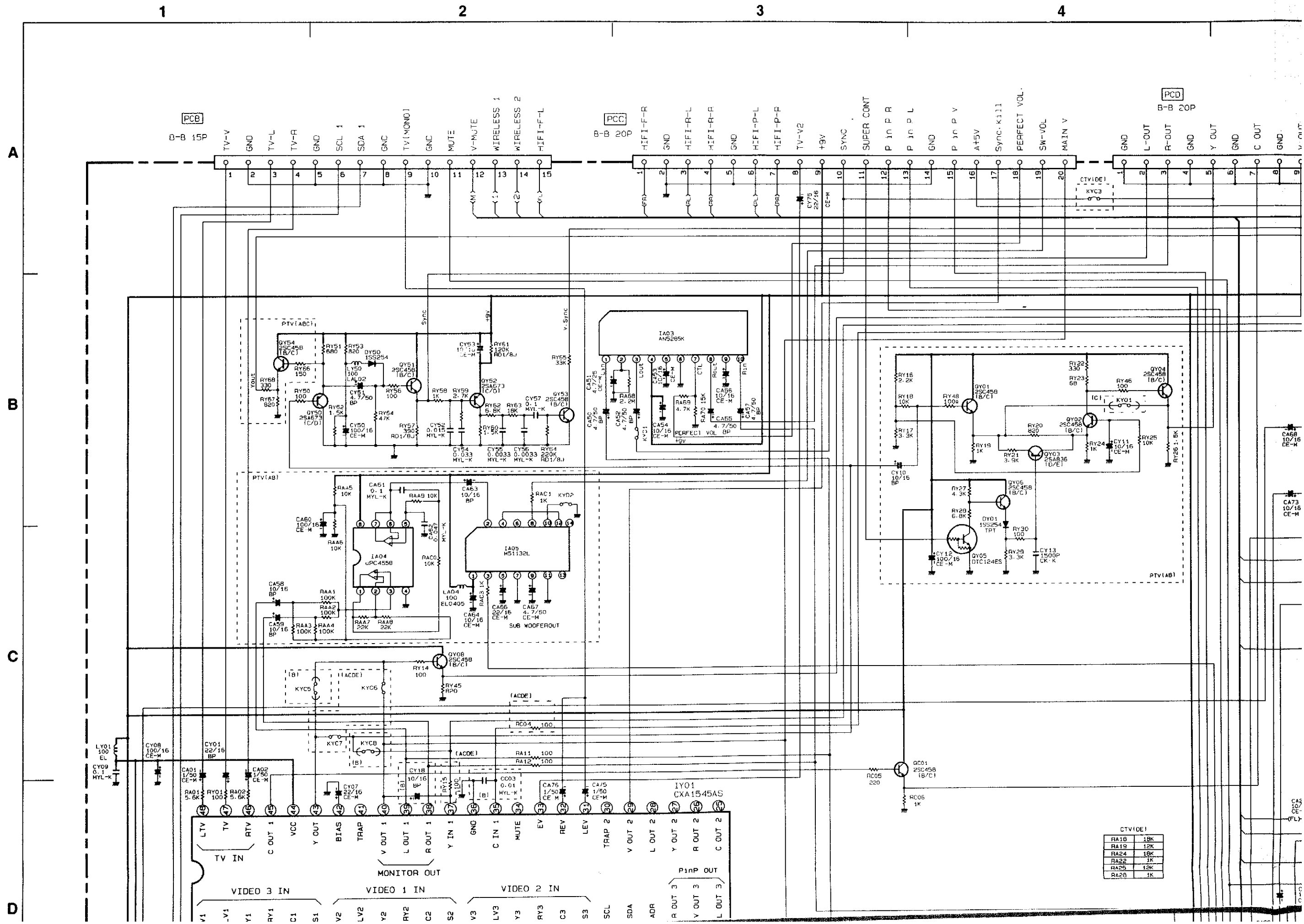
Circuit No.	Pin No.	Voltage VDC
Q302	B	0
	C	9.0
	E	0
Q303	B	0
	C	5.1
	E	0
Q304	B	7.9
	C	9.0
	E	7.2
Q305	B	4.5
	C	8.9
	E	3.9
Q310	B	4.4
	C	9.0
	E	3.8
Q311	B	8.1
	C	0
	E	0
Q312	B	8.1
	C	0
	E	0
Q313	B	0.7
	C	0
	E	0

Circuit No.	Pin No.	Voltage VDC
Q501	B	8.4
	C	9.0
	E	9.0
Q502	B	0.7
	C	0
	E	0
Q503	B	8.8
	C	9.0
	E	8.1
Q506	B	2.2
	C	9.0
	E	1.5

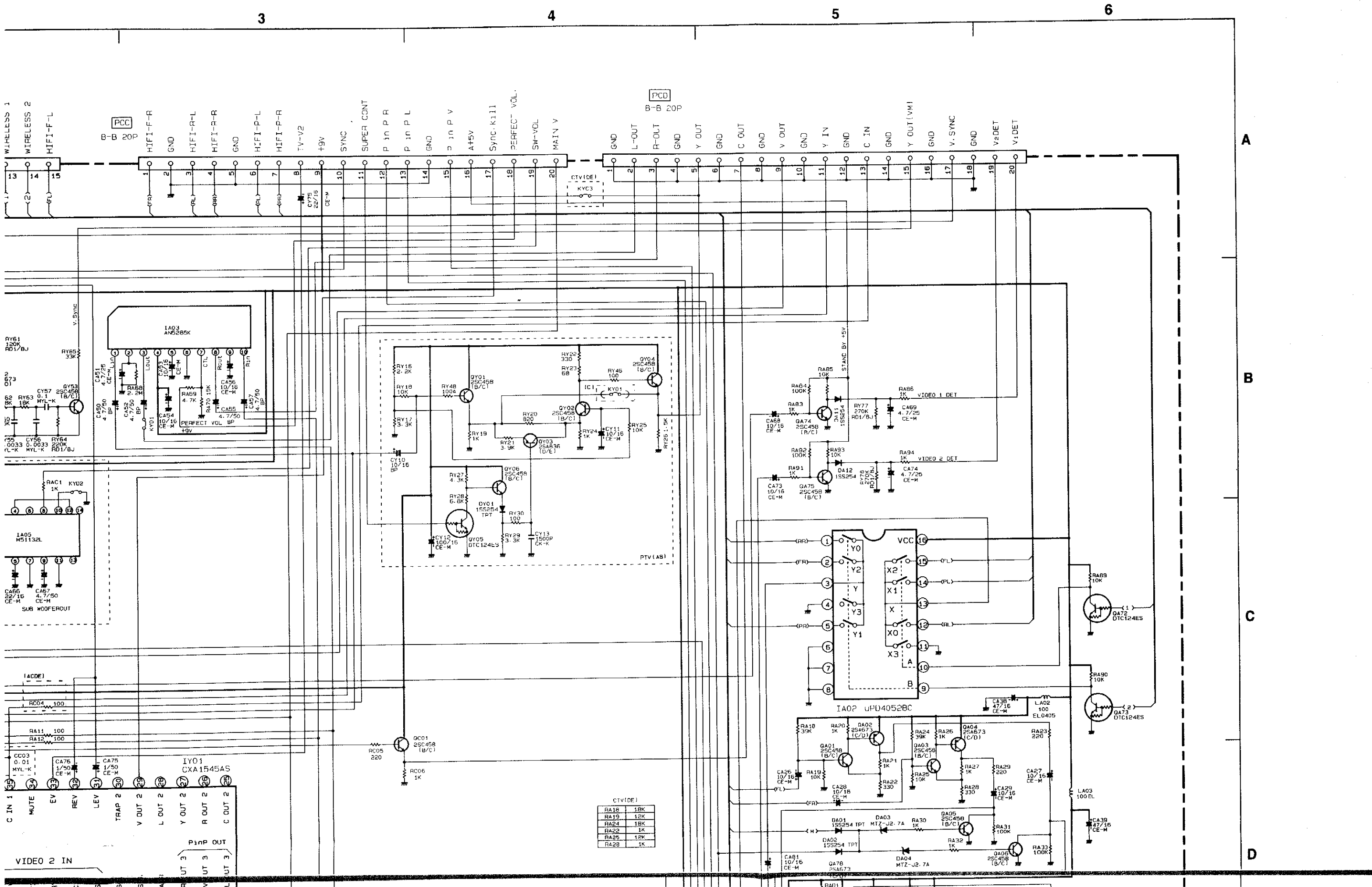


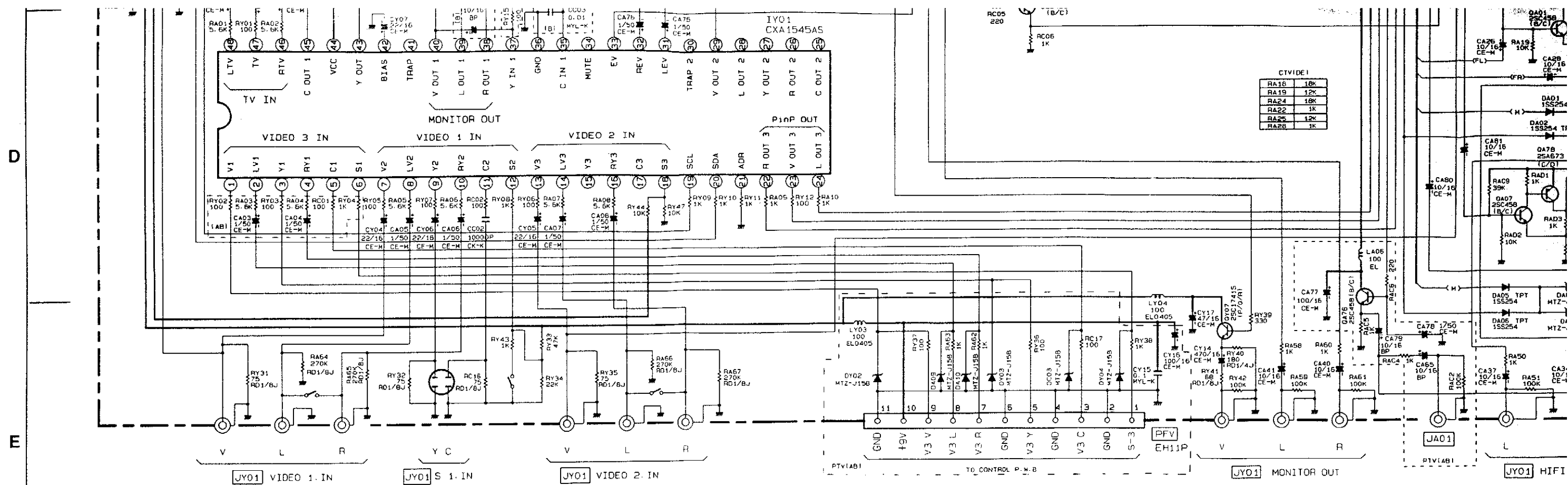
BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Com
safety. Before replacing any of the
Manual. Don't degrade the safety



PRODUCT SAFETY NOTE: Components marked with a and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.





- All DC voltage to be measured with a tester (100k Ω /V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

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Circuit No.	Pin No.	Voltage VDC
IA02	1	4.1
	2	4.1
	3	4.1
	4	0
	5	4.1
	6	0
	7	0
	8	0
	9	9.0
	10	0
	11	0
	12	4.1
	13	4.1
	14	4.1
	15	4.1
	16	9.0

Circuit No.	Pin No.	Voltage VDC
IA03	1	4.5
	2	4.0
	3	4.5
	4	9.0
	5	4.5
	6	0
	7	0
	8	4.5
	9	1.9
	10	4.5

Circuit No.	Pin No.	Voltage VDC
IY01	1	4.6
	2	4.6
	3	4.6
	4	4.6
	5	4.6
	6	0.2
	7	4.6
	8	4.6
	9	4.6
	10	4.6
	11	4.6
	12	2.5
	13	4.6
	14	4.6
	15	4.6
	16	4.6
	17	4.6
	18	4.3
	19	5.0
	20	5.0
	21	0
	22	4.7
	23	4.5
	24	4.7

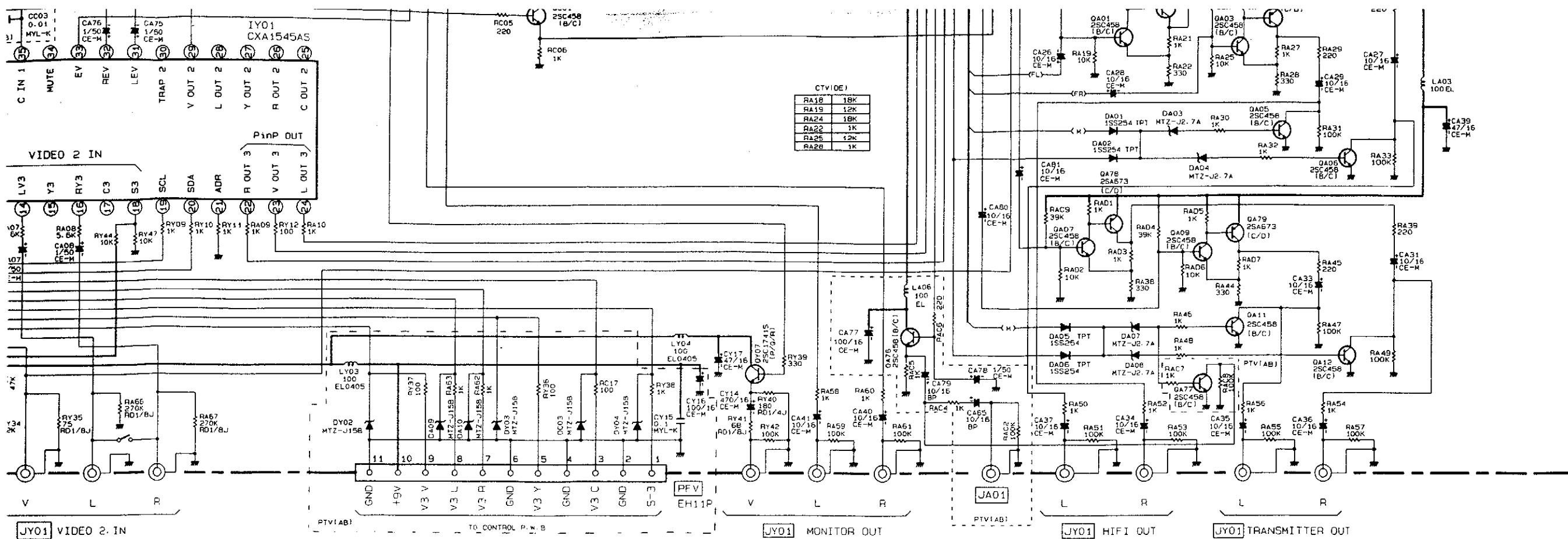
Circuit No.	Pin No.	Voltage VDC
IY01	25	4.5
	26	4.7
	27	4.5
	28	4.7
	29	4.5
	30	4.5
	31	4.6
	32	4.6
	33	4.6
	34	0
	35	4.6
	36	0
	37	4.6
	38	4.7
	39	4.7
	40	4.5
	41	4.5
	42	4.7
	43	4.5
	44	8.9
	45	4.5
	46	4.6
	47	4.6
	48	4.6

Circuit No.	Pin No.	Voltage VDC
QA01	B	1.8
	C	8.3
	E	1.2
QA02	B	8.3
	C	4.1
	E	9.0
QA03	B	1.8
	C	8.3
	E	1.2
QA04	B	8.3
	C	4.2
	E	9.0
QA05	B	0
	C	0
	E	0
QA06	B	0
	C	0
	E	0
QA07	B	1.8
	C	8.3
	E	1.2
QA09	B	0
	C	0
	E	0
QA11	B	0
	C	0
	E	0
QA12	B	0
	C	0
	E	0

Circuit No.	Pin No.	Voltage VDC
QA72	B	4.9
	C	0
	E	0
QA73	B	0.1
	C	9.0
	E	0
QA74	B	0.6
	C	0
	E	0
QA75	B	0.6
	C	0.1
	E	0
QA78	B	8.3
	C	4.1
	E	9.0
QA79	B	8.3
	C	4.2
	E	9.0

Circuit No.	Pin No.	Voltage VDC
QC01	B	4.5
	C	9.0
	E	3.8
QY01	B	5.2
	C	9.0
	E	4.5
QY07	B	4.4
	C	8.9
	E	3.8
QY08	B	4.5
	C	9.0
	E	3.8

Circuit No.	Pin No.	Voltage VDC
QY50	B	4.5
	C	0
	E	5.1
QY51	B	6.0
	C	9.0
	E	5.3
QY52	B	5.3
	C	0.1
	E	5.2
QY53	B	-0.2
	C	6.3
	E	0
QY54	B	5.1
	C	9.0
	E	4.4



- All DC voltage to be measured with a tester (100k Ω /V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

AP62 TERMINAL P.W.B.

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Circuit No.	Pin No.	Voltage VDC
IA02	1	4.1
	2	4.1
	3	4.1
	4	0
	5	4.1
	6	0
	7	0
	8	0
	9	9.0
	10	0
	11	0
	12	4.1
	13	4.1
	14	4.1
	15	4.1
	16	9.0

Circuit No.	Pin No.	Voltage VDC
IA03	1	4.5
	2	4.0
	3	4.5
	4	9.0
	5	4.5
	6	0
	7	0
	8	4.5
	9	1.9
	10	4.5

Circuit No.	Pin No.	Voltage VDC
IY01	1	4.6
	2	4.6
	3	4.6
	4	4.6
	5	4.8
	6	0.2
	7	4.6
	8	4.6
	9	4.6
	10	4.6
	11	4.6
	12	2.5
	13	4.6
	14	4.6
	15	4.6
	16	4.6
	17	4.6
	18	4.3
	19	5.0
	20	5.0
	21	0
	22	4.7
	23	4.5
	24	4.7

Circuit No.	Pin No.	Voltage VDC
IY01	25	4.5
	26	4.7
	27	4.5
	28	4.7
	29	4.5
	30	4.5
	31	4.6
	32	4.6
	33	4.6
	34	0
	35	4.6
	36	0
	37	4.6
	38	4.7
	39	4.7
	40	4.5
	41	4.5
	42	4.7
	43	4.5
	44	8.9
	45	4.5
	46	4.8
	47	4.6
	48	4.6

Circuit No.	Pin No.	Voltage VDC
QA01	B	1.8
	C	8.3
	E	1.2
QA02	B	8.3
	C	4.1
	E	9.0
QA03	B	1.8
	C	8.3
	E	1.2
QA04	B	8.3
	C	4.2
	E	9.0
QA05	B	0
	C	0
	E	0
QA06	B	0
	C	0
	E	0
QA07	B	1.8
	C	8.3
	E	1.2
QA09	B	1.8
	C	8.3
	E	1.2
QA11	B	0
	C	0
	E	0
QA12	B	0
	C	0
	E	0

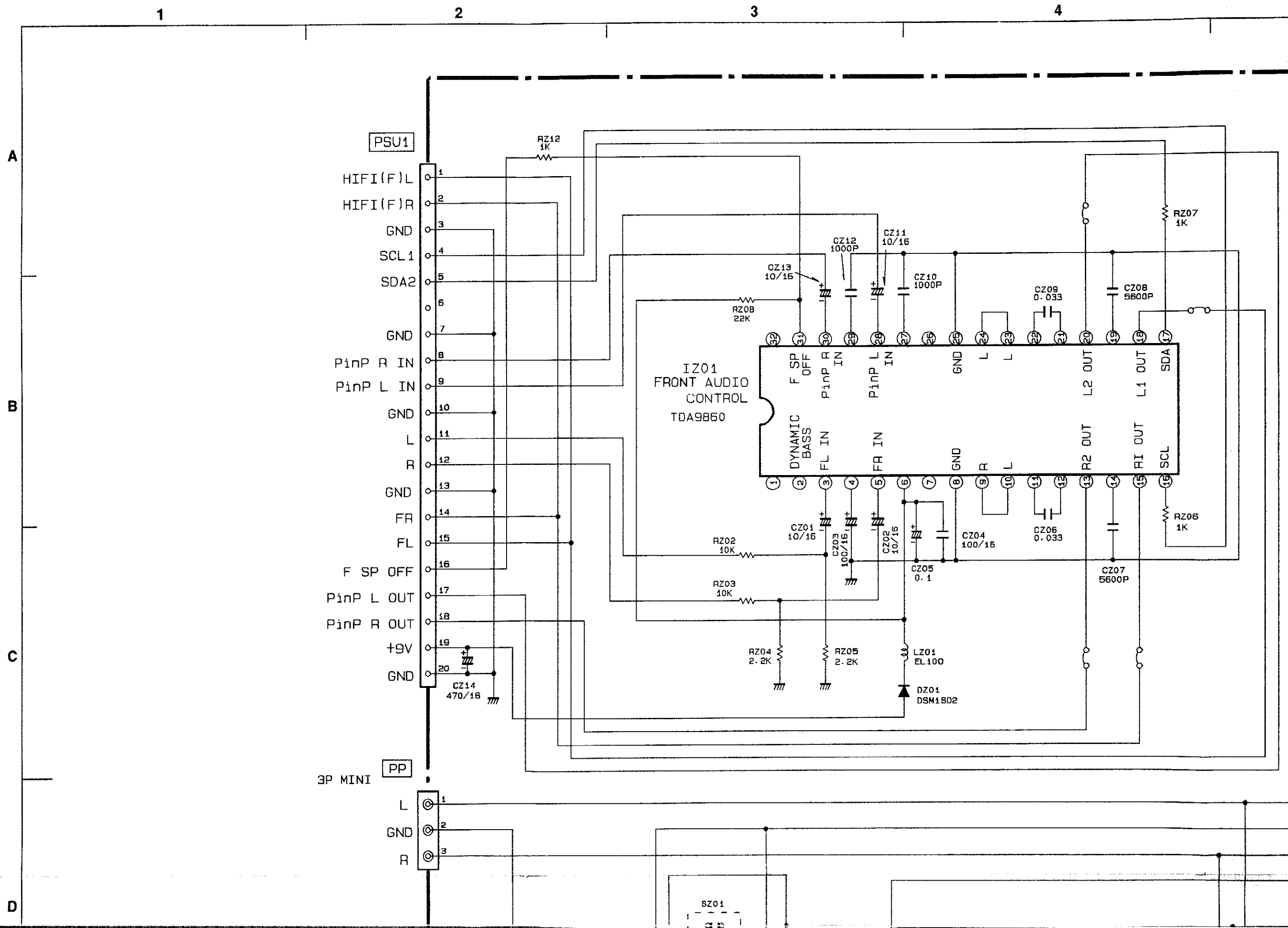
Circuit No.	Pin No.	Voltage VDC
QA72	B	4.9
	C	0
	E	0
QA73	B	0.1
	C	9.0
	E	0
QA74	B	0.6
	C	0
	E	0
QA75	B	0.6
	C	0.1
	E	0
QA78	B	8.3
	C	4.1
	E	9.0
QA79	B	8.3
	C	4.2
	E	9.0

Circuit No.	Pin No.	Voltage VDC
QC01	B	4.5
	C	9.0
	E	3.8
QY01	B	5.2
	C	9.0
	E	4.5
QY07	B	4.4
	C	8.9
	E	3.8
QY08	B	4.5
	C	9.0
	E	3.8

Circuit No.	Pin No.	Voltage VDC
QY50	B	4.5
	C	0
	E	5.1
QY51	B	6.0
	C	9.0
	E	5.3
QY52	B	5.3
	C	0.1
	E	5.2
QY53	B	-0.2
	C	6.3
	E	0
QY54	B	5.1
	C	9.0
	E	4.4

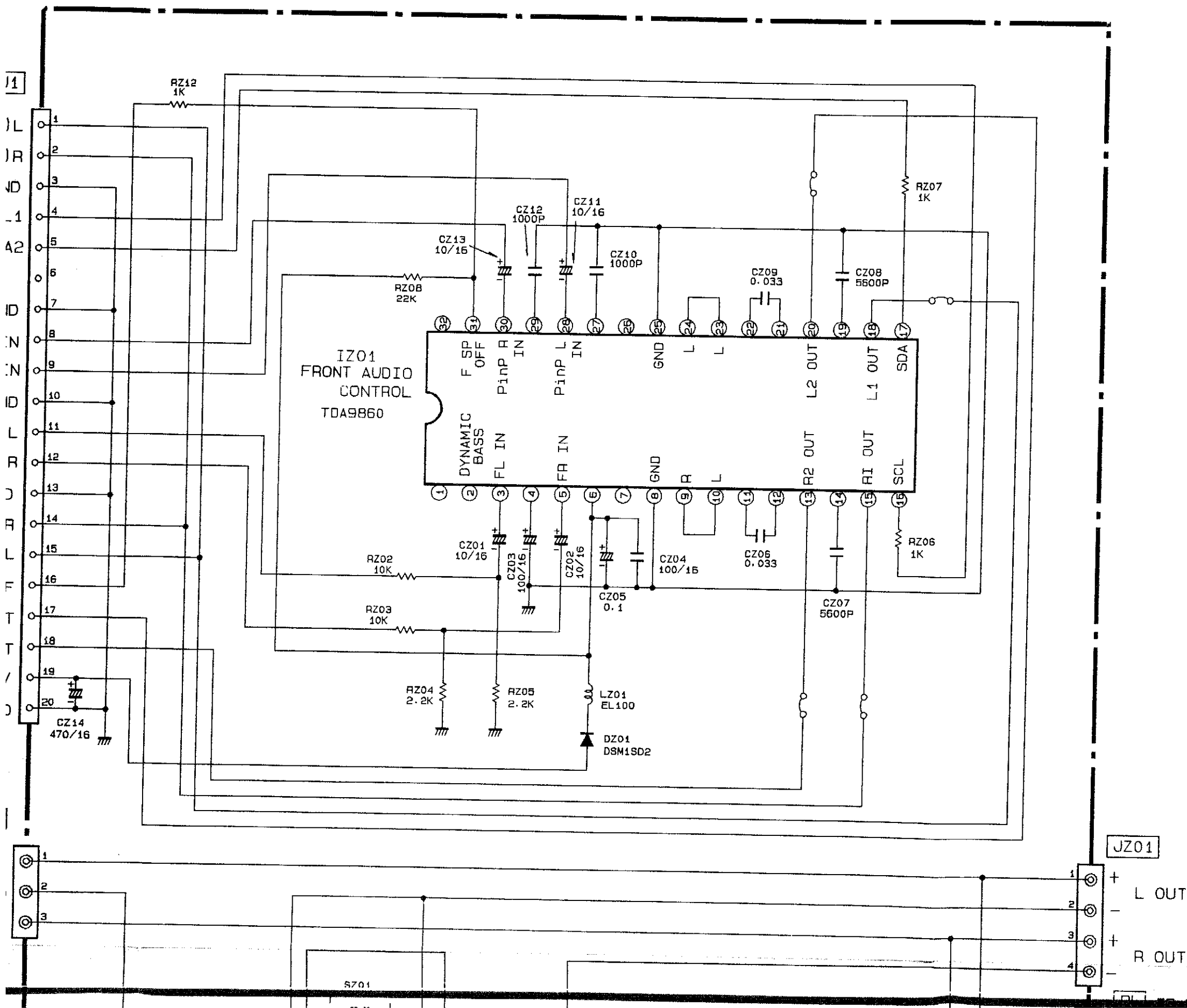
SP TERMINAL

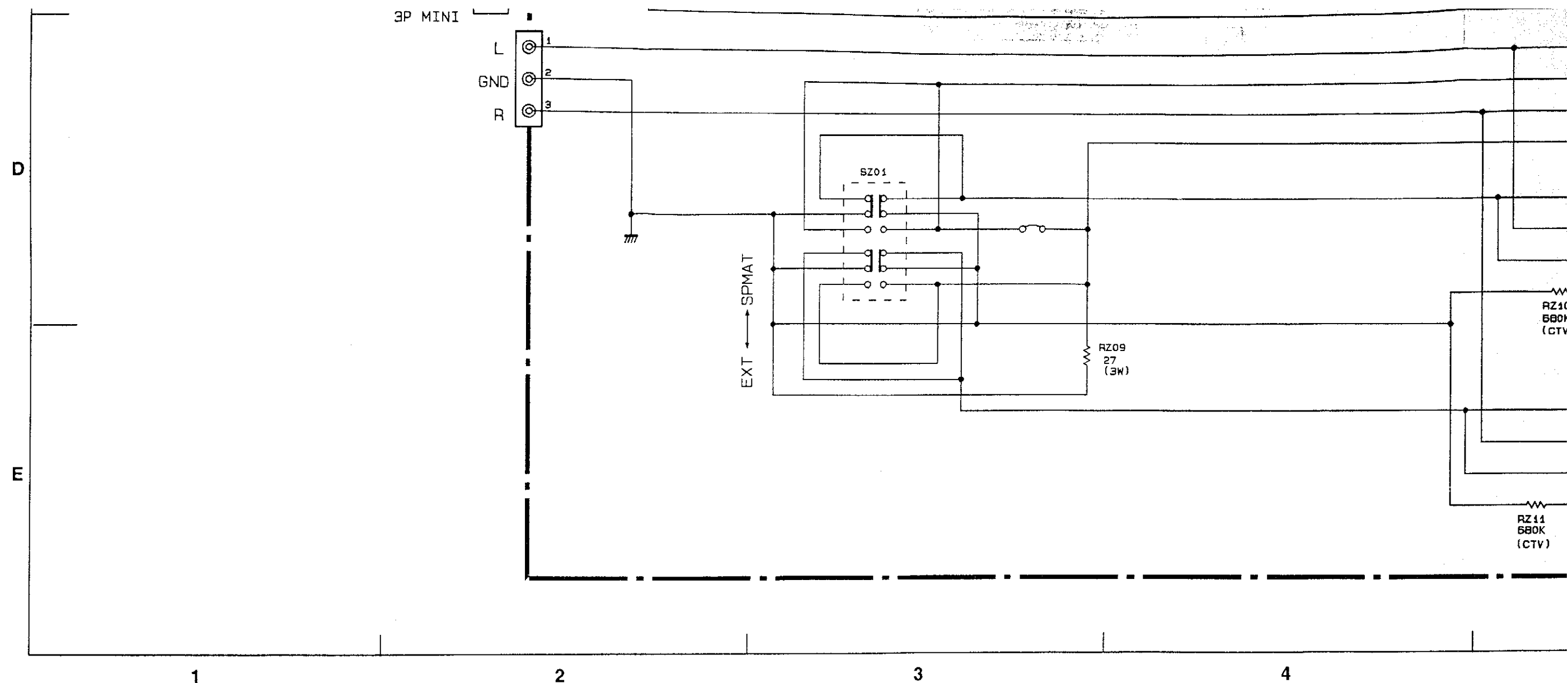
BASIC CIRCUIT DIAGRAM



BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

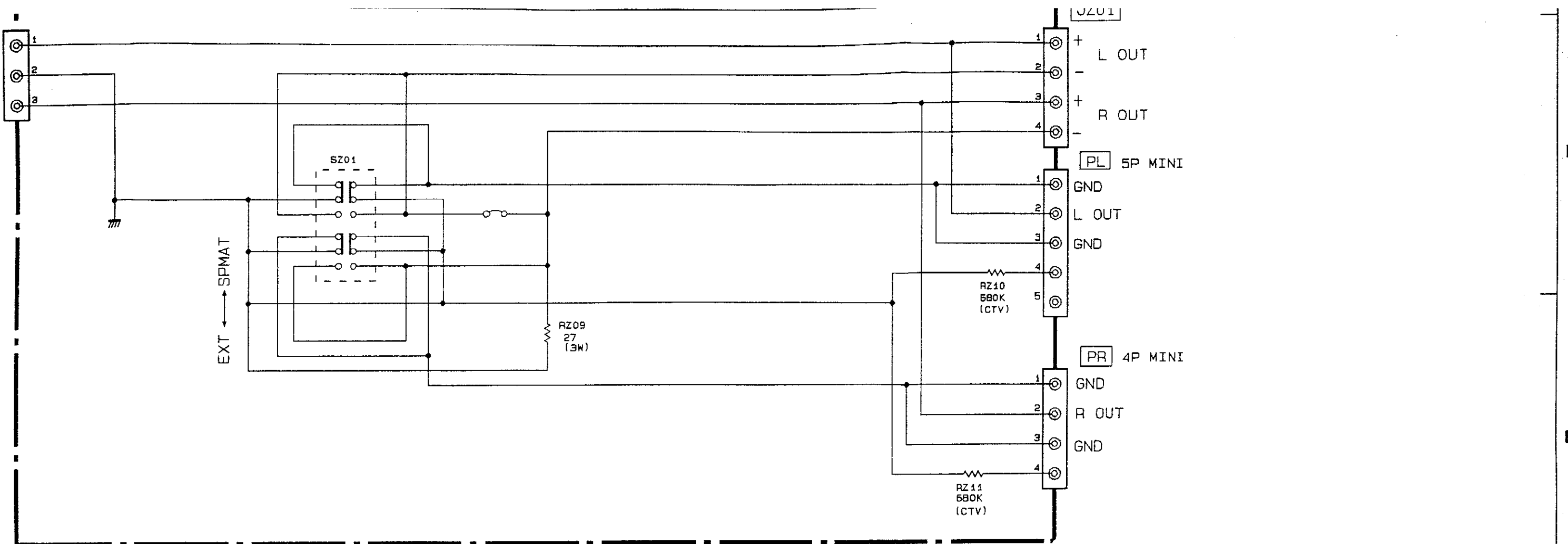




Circuit No.	Pin No.	Voltage VDC
IZ01	1	4.1
	2	0
	3	4.1
	4	8.0
	5	4.3
	6	8.2
	7	4.1
	8	0
	9	4.1
	10	4.1
	11	4.1
	12	4.1
	13	4.1
	14	4.1
	15	4.1
	16	5.1

Circuit No.	Pin No.	Voltage VDC
IZ01	17	5.0
	18	4.1
	19	4.1
	20	4.1
	21	4.1
	22	4.1
	23	4.1
	24	4.1
	25	0
	26	4.1
	27	4.1
	28	4.1
	29	4.1
	30	4.1
	31	0.2
	32	4.1

• All DC voltage to be measured with
• Since this is a basic circuit diagram



AP62 SP TERMINAL

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Circuit No.	Pin No.	Voltage VDC
IZ01	1	4.1
	2	0
	3	4.1
	4	8.0
	5	4.3
	6	8.2
	7	4.1
	8	0
	9	4.1
	10	4.1
	11	4.1
	12	4.1
	13	4.1
	14	4.1
	15	4.1
	16	5.1

Circuit No.	Pin No.	Voltage VDC
IZ01	17	5.0
	18	4.1
	19	4.1
	20	4.1
	21	4.1
	22	4.1
	23	4.1
	24	4.1
	25	0
	26	4.1
	27	4.1
	28	4.1
	29	4.1
	30	4.1
	31	0.2
	32	4.1

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOT
safety. Before replacing a
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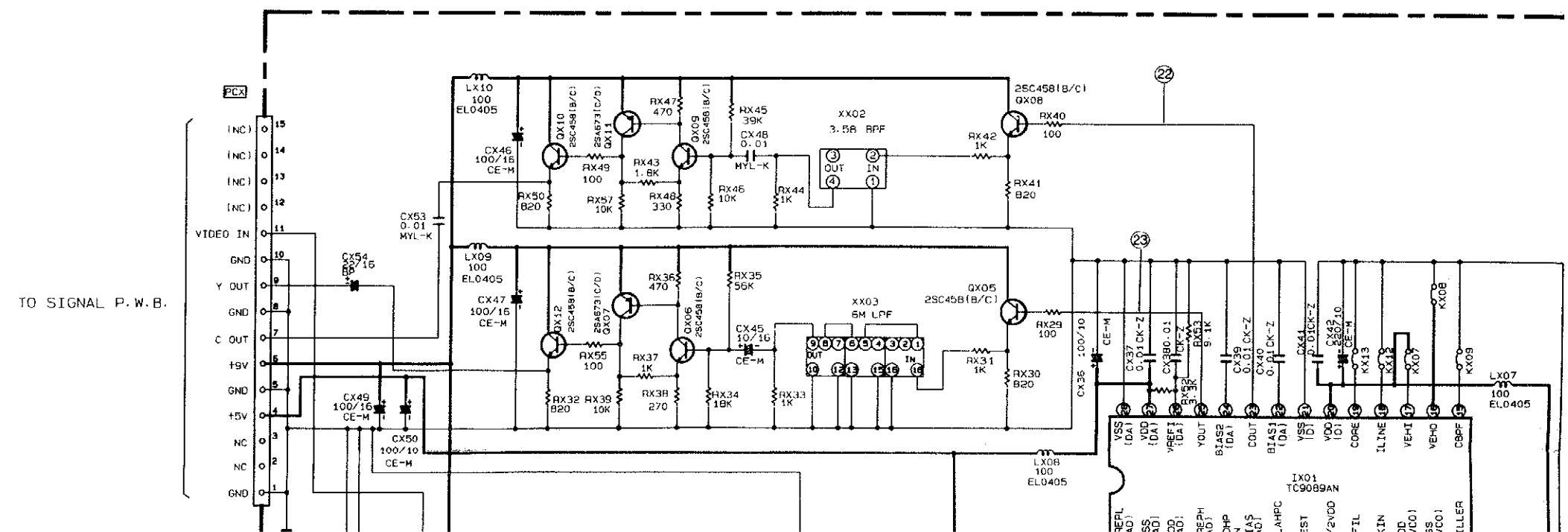
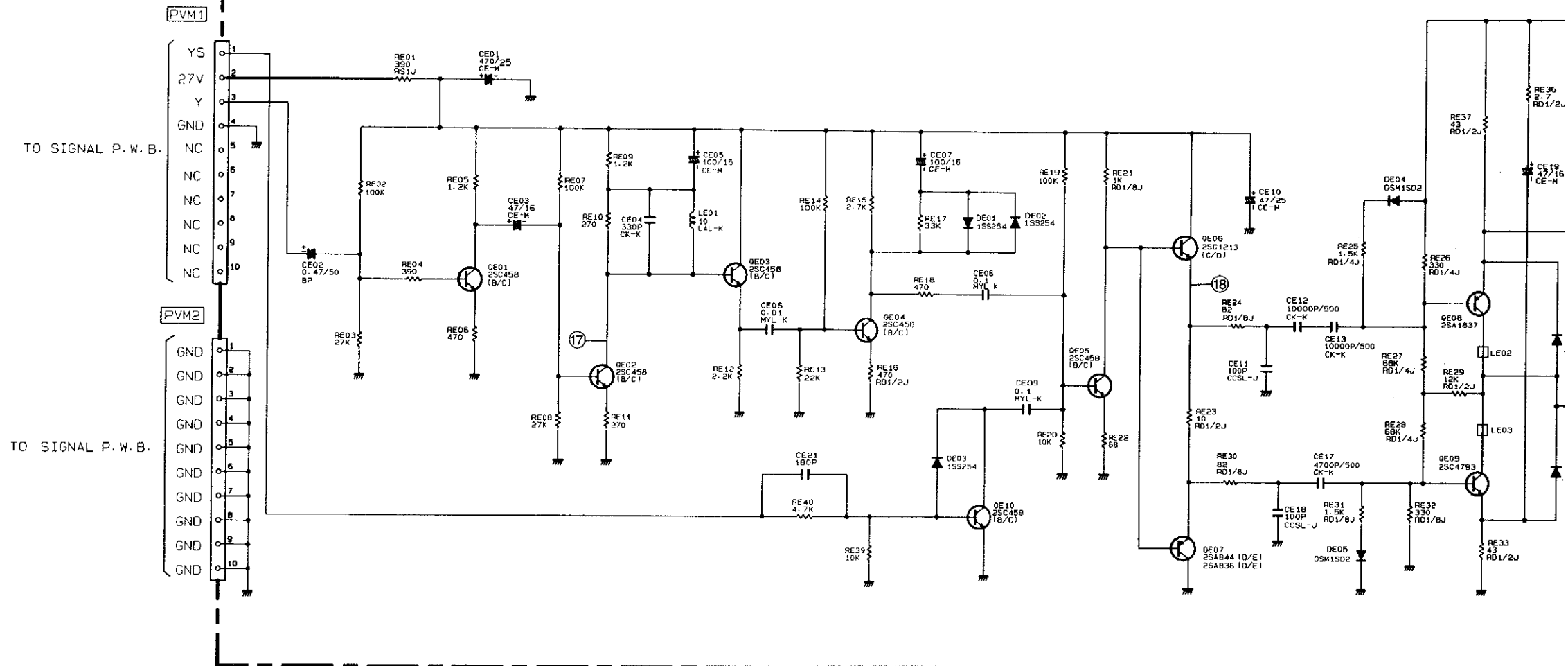
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A

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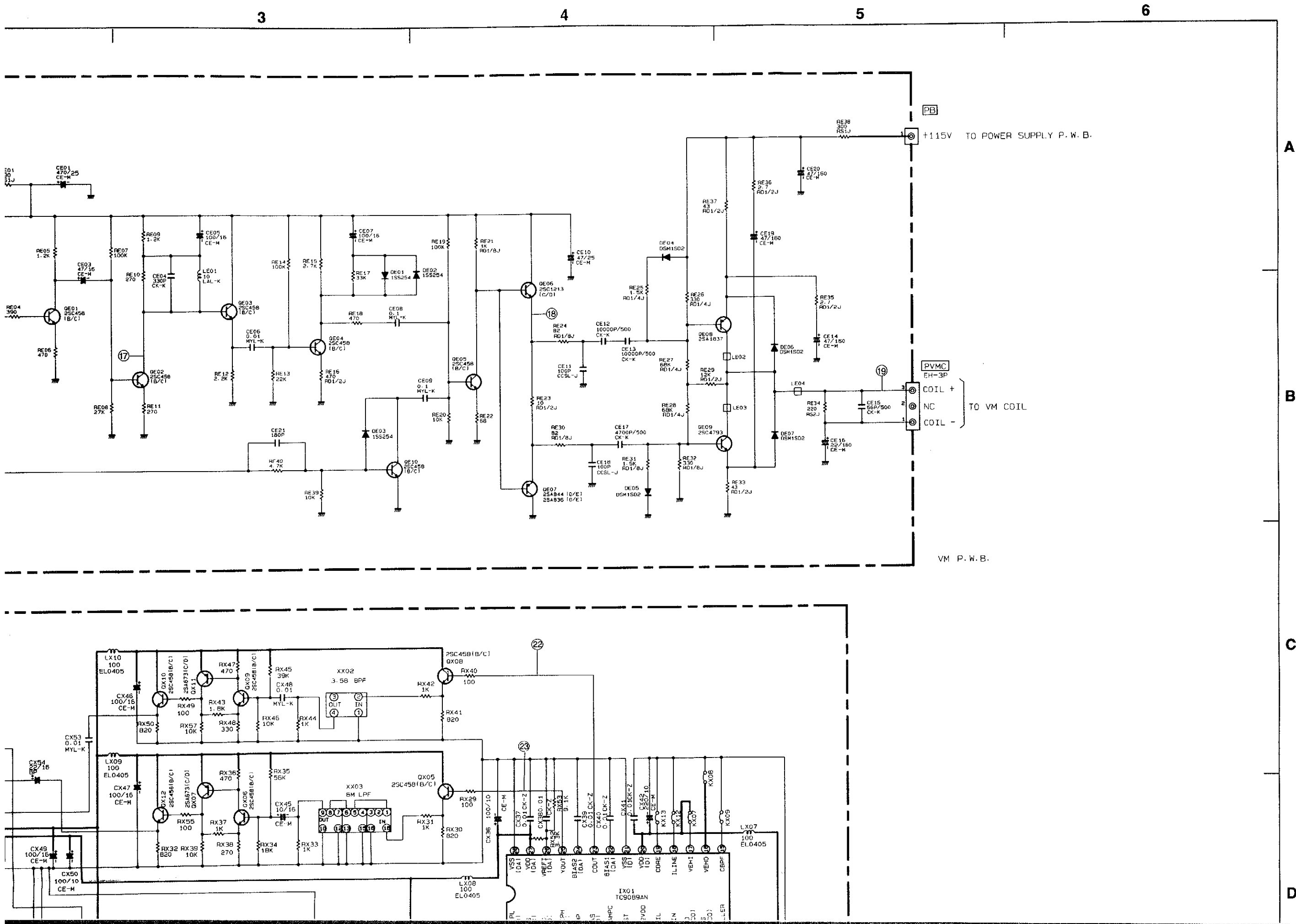
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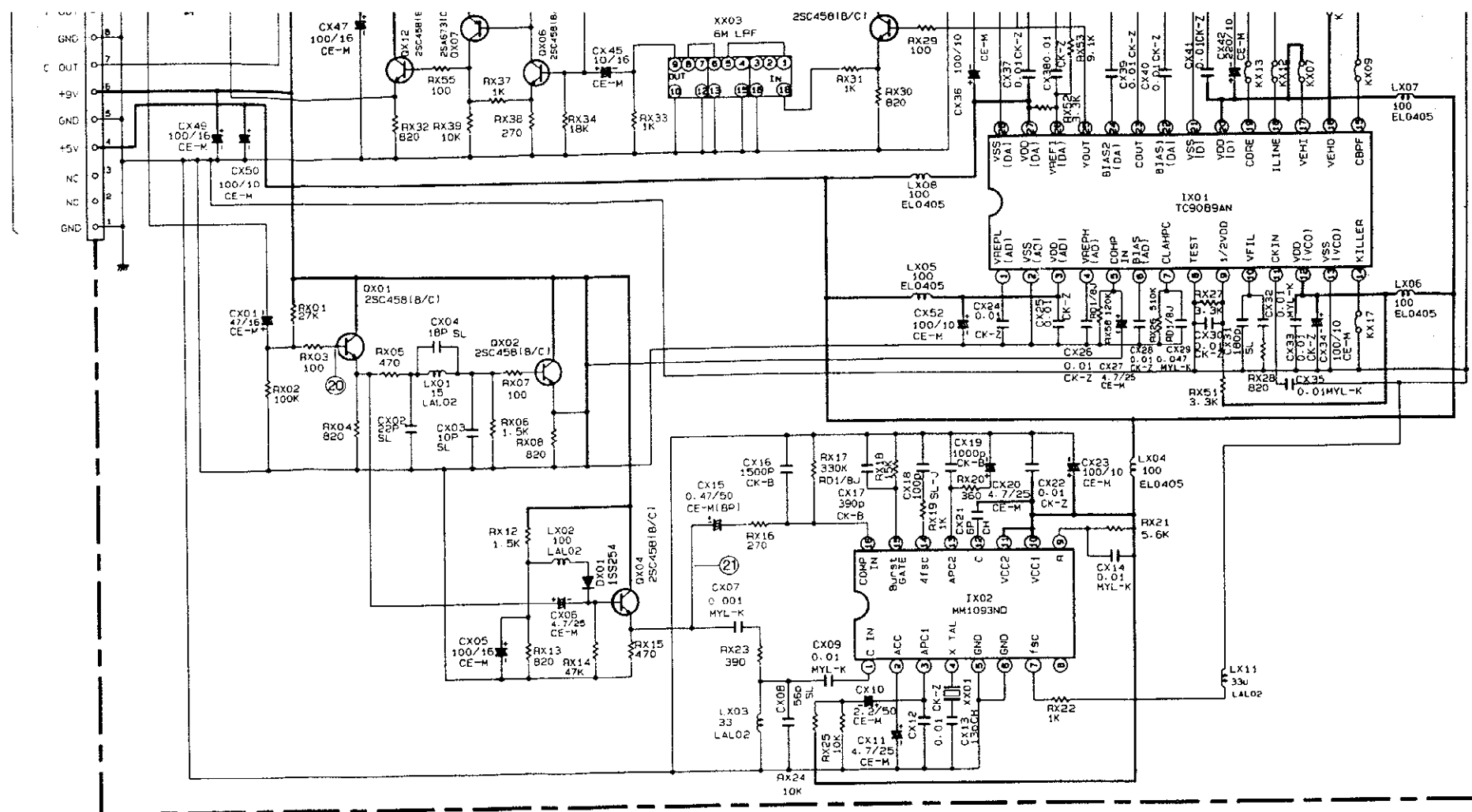
D



BASIC CIRCUIT DIAGRAM

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- All DC voltage to be measured with a tester (100kΩ/V).
- Since this is a basic circuit diagram, the value of the par

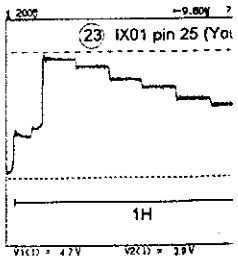
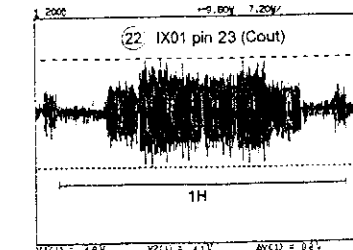
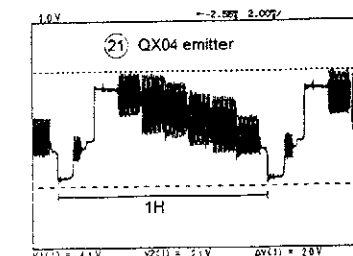
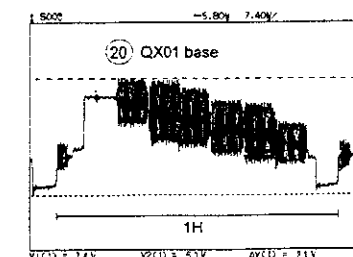
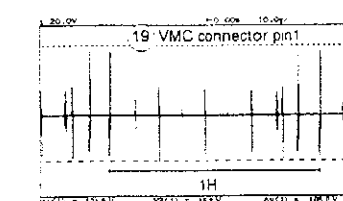
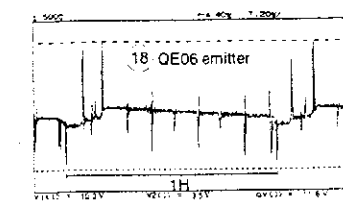
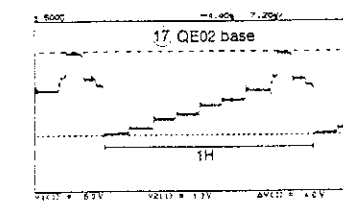
Circuit No.	Pin No.	Voltage VDC
IX01	1	1.5
	2	0
	3	5.2
	4	3.6
	5	2.3
	6	1.5
	7	3.5
	8	0
	9	2.6
	10	2.0
	11	2.2
	12	5.2
	13	0
	14	0
	15	0
	16	0
	17	5.1
	18	0
	19	0
	20	5.1
	21	0
	22	3.7
	23	4.4
	24	1.9
	25	4.2
	26	3.8
	27	5.1
	28	0

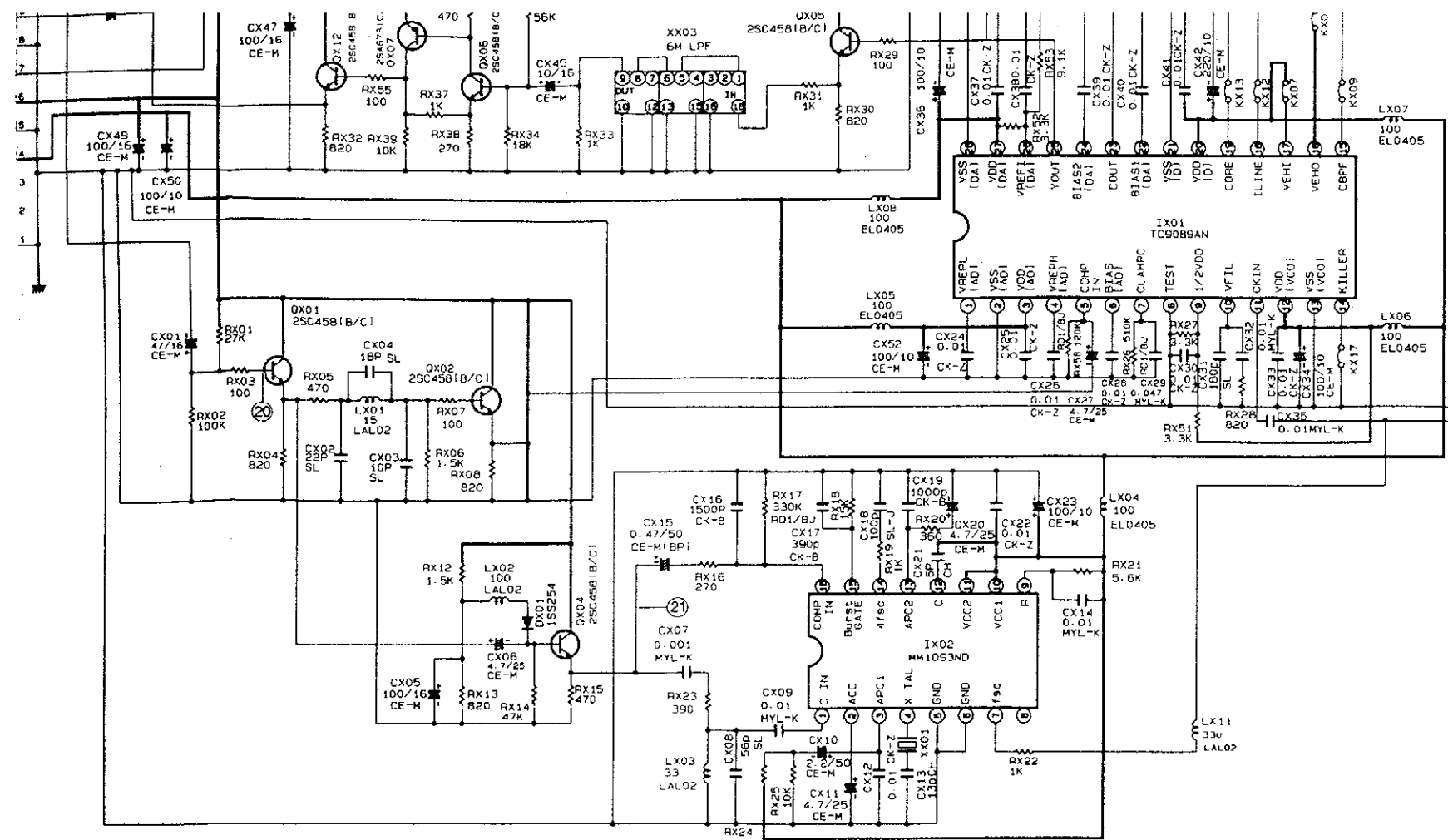
Circuit No.	Pin No.	Voltage VDC
IX02	1	3.6
	2	0.9
	3	2.5
	4	3.5
	5	0
	6	0
	7	2.4
	8	0
	9	3.6
	10	5.1
	11	5.1
	12	3.4
	13	2.2
	14	3.2
	15	0.8
	16	2.8

Circuit No.	Pin No.	Voltage VDC
QX01	B	6.1
	C	9.0
	E	5.4
	B	4.1
QX02	C	9.0
	E	3.4
	B	3.5
	C	9.0
QX04	E	2.8
	B	4.3
	C	8.9
	E	3.6
QX05	B	2.1
	C	8.3
	E	1.4
	B	8.3
QX06	C	5.3
	E	8.9
	B	8.9
	E	8.9

Circuit No.	Pin No.	Voltage VDC
QX08	B	4.4
	C	8.9
	E	3.8
	B	1.8
QX09	C	8.3
	E	1.1
	B	5.0
	C	9.0
QX10	E	4.3
	B	8.3
	C	5.0
	E	8.9
QX11	B	5.3
	C	8.9
	E	4.6
	B	8.9

Circuit No.	Pin No.	Voltage VDC
QE01	B	2.8
	C	10.1
	E	2.1
	B	2.6
QE02	C	7.1
	E	1.9
	B	7.1
	C	15.5
QE03	E	6.4
	B	2.6
	C	4.9
	E	1.9
QE04	B	1.1
	C	9.1
	E	0.4
	B	9.1
QE05	C	15.5
	E	9.1
	B	9.1
	E	9.1
QE06	B	112.4
	C	50.2
	E	112.5
	B	0.2
QE07	C	49.8
	E	0.2
	B	0
	C	0.1
QE08	E	0
	B	0
	C	0
	E	0





3L COMB P.W.B.

AP62 VM P.W.B.
AP62 3L COMB P.W.B.

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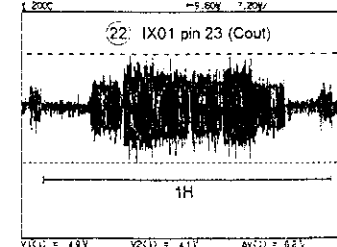
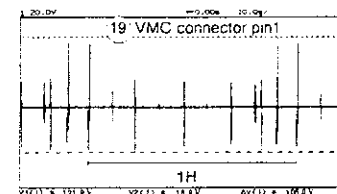
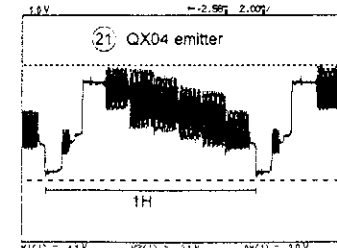
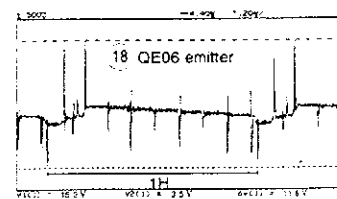
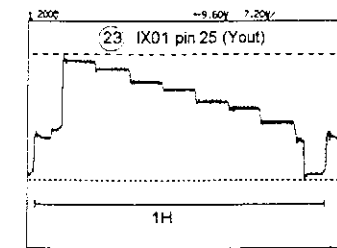
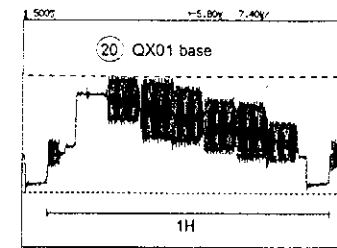
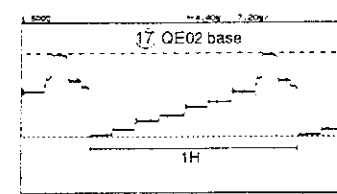
- All DC voltage to be measured with a tester (100k Ω /V). Voltage taken on a complex color bar signal including a standard color bar signal.
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Circuit No.	Pin No.	Voltage VDC
IX02	1	3.6
	2	0.9
	3	2.5
	4	3.5
	5	0
	6	0
	7	2.4
	8	0
	9	3.6
	10	5.1
	11	5.1
	12	3.4
	13	2.2
	14	3.2
	15	0.8
	16	2.8

Circuit No.	Pin No.	Voltage VDC
QX01	B	6.1
	C	9.0
QX02	B	5.4
	E	4.1
QX04	C	9.0
	E	2.8
QX05	B	4.3
	C	8.9
QX06	B	2.1
	C	8.3
QX07	B	8.3
	E	5.3

Circuit No.	Pin No.	Voltage VDC
QX08	B	4.4
	C	8.9
QX09	B	3.8
	E	1.8
QX10	C	8.3
	E	1.1
QX11	B	5.0
	C	9.0
QX12	B	8.3
	E	5.3

Circuit No.	Pin No.	Voltage VDC
QE01	B	2.8
	C	10.1
QE02	B	2.1
	E	2.6
QE03	C	7.1
	E	1.9
QE04	B	7.1
	C	15.5
QE05	B	6.4
	C	2.6
QE06	B	4.9
	E	1.9
QE07	B	1.1
	C	9.1
QE08	B	0.4
	E	9.1
QE09	B	9.1
	C	0
QE10	B	112.4
	E	50.2

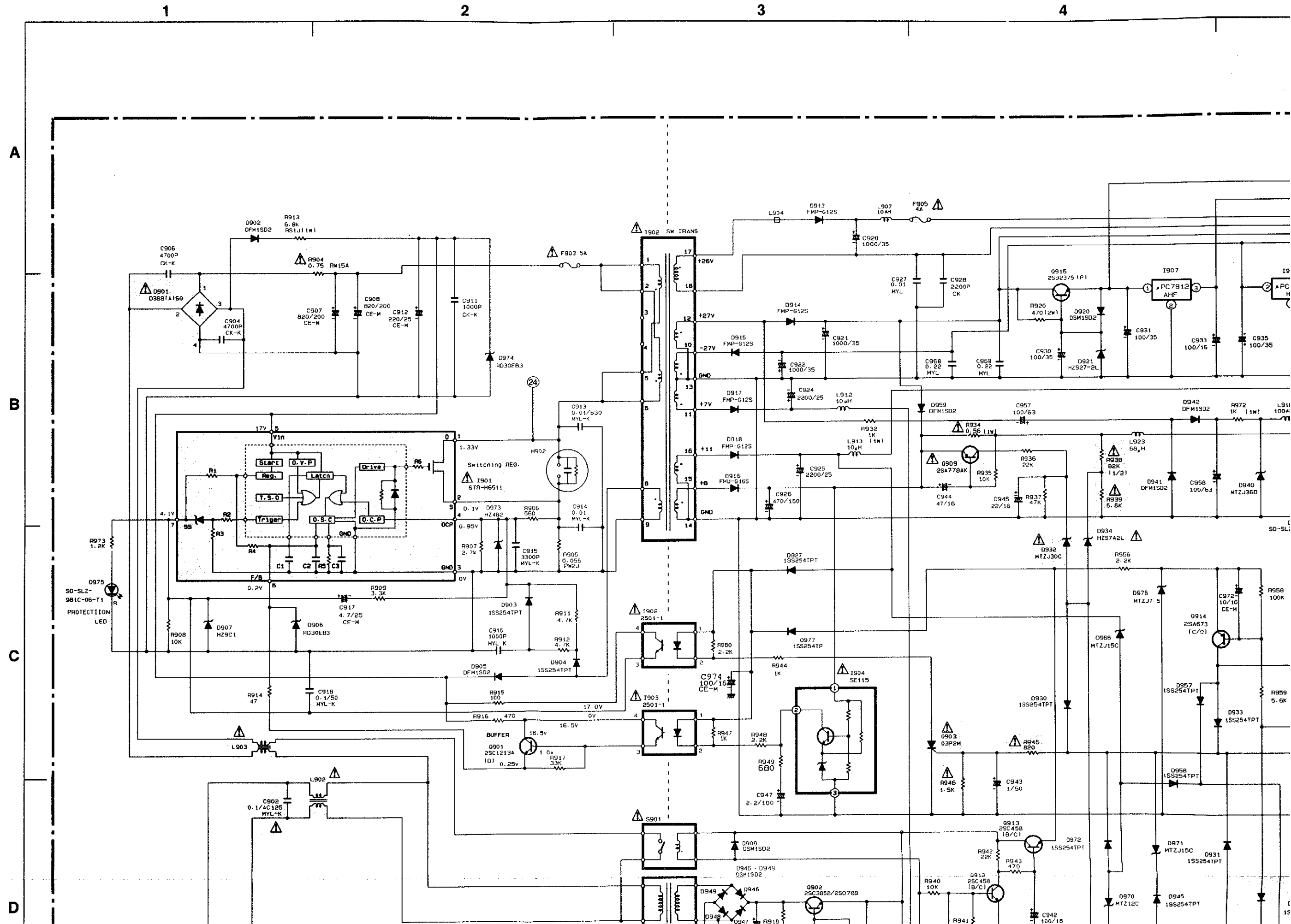


50FX18B
50FX19K
55FX20B

VM/3L COMB
POWER SUPPLY

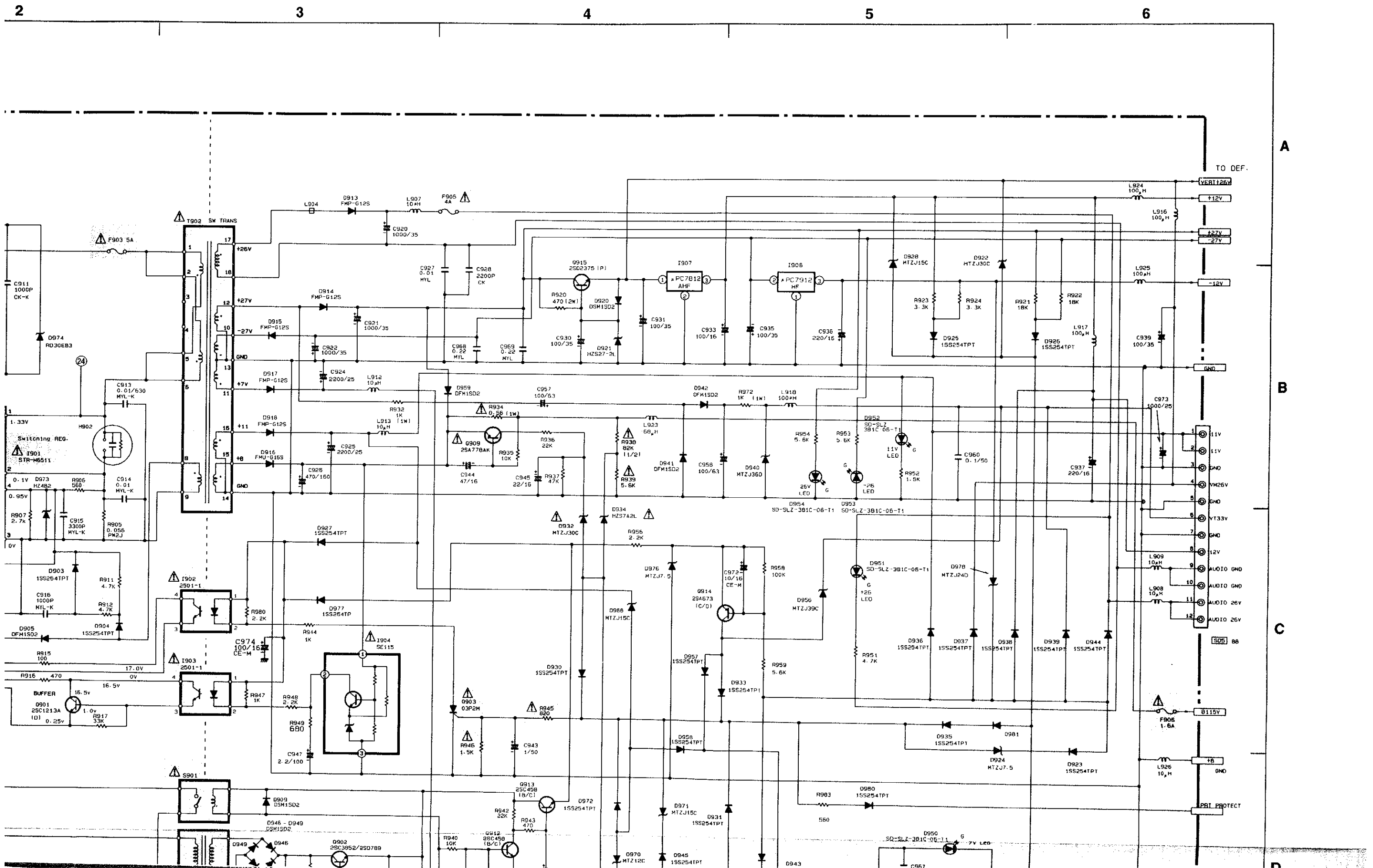
BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE:
Safety. Before replacing any
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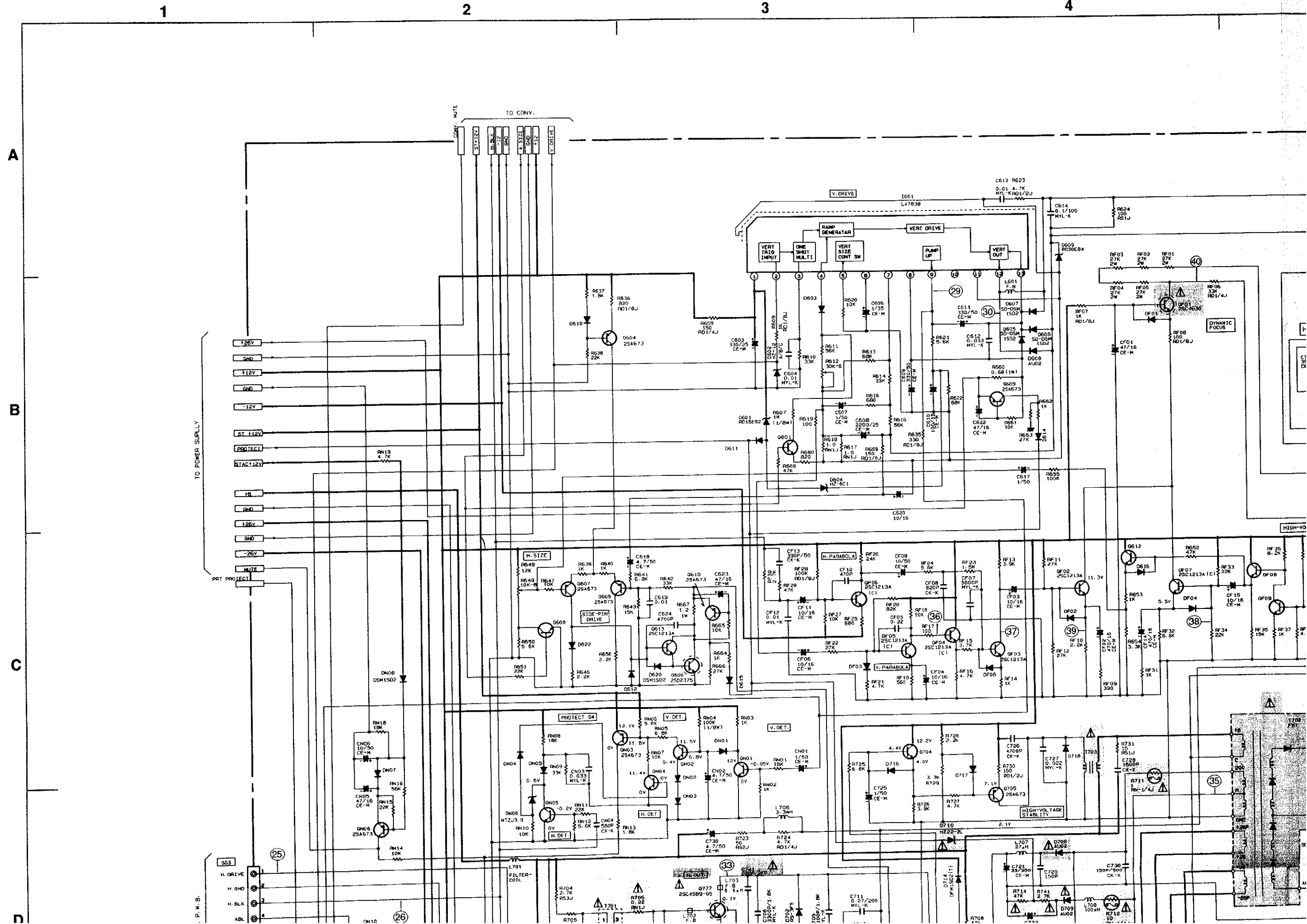
BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

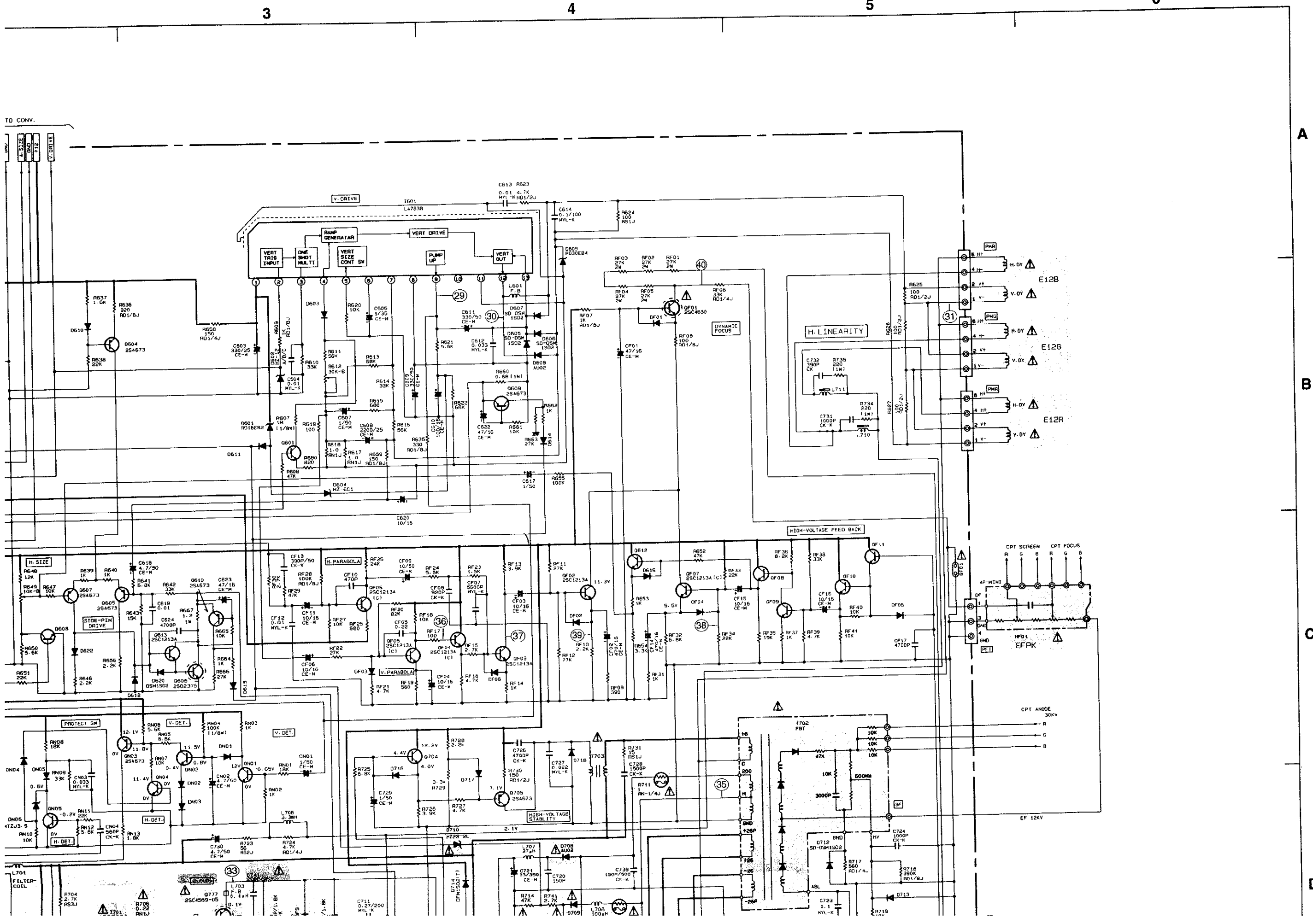


BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Cor
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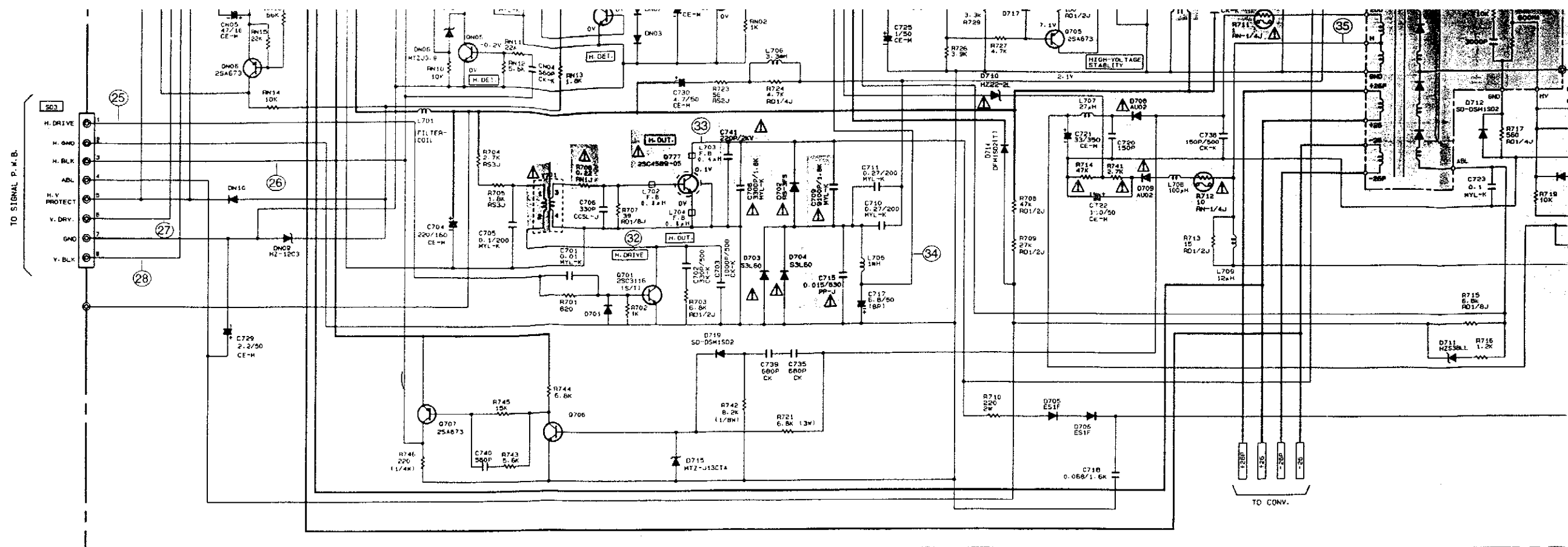


BASIC CIRCUIT DIAGRAM



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- All DC voltage to be measured with a tester (100k Ω /V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

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Circuit No.	Pin No.	Voltage VDC
I601	1	11.1
	2	4.4
	3	5.5
	4	5.6
	5	0
	6	5.1
	7	5.6
	8	25.3
	9	1.6
	10	1.4
	11	0
	12	13.0
	13	25.1

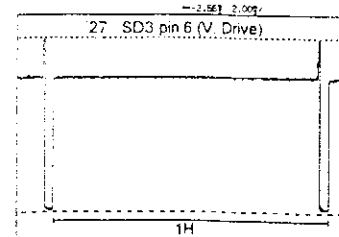
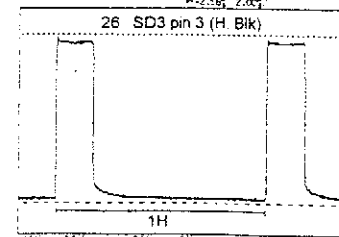
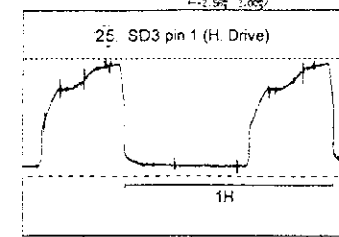
2

Circuit No.	Pin No.	Voltage VDC
Q601	B	0
	C	4.7
	E	0
Q604	B	10.4
	C	4.2
	E	11.0
Q605	B	2.9
	C	1.7
	E	3.5
Q606	B	0.5
	C	15.6
	E	0
Q607	B	3.4
	C	1.1
	E	3.9
Q608	B	0
	C	2.4
	E	0
Q609	B	25.6
	C	0
	E	25.9
Q610	B	15.6
	C	0
	E	15.8
Q612	B	4.3
	C	11.8
	E	3.7
Q613	B	0.9
	C	15.6
	E	0.5

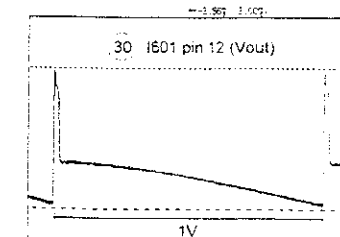
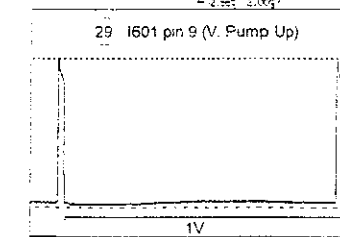
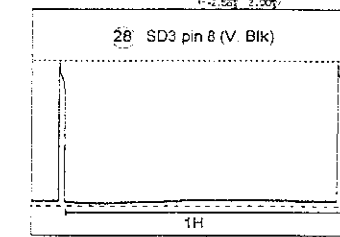
Circuit No.	Pin No.	Voltage VDC
Q701	B	0.2
	C	37.3
	E	0
Q704	B	3.8
	C	11.8
	E	3.3
Q705	B	6.0
	C	2.3
	E	6.7
Q706	B	-0.5
	C	9.6
	E	0
Q707	B	12.8
	C	2.3
	E	11.8
Q777	B	-0.1
	C	112.9
	E	0

Circuit No.	Pin No.	Voltage VDC
QF01	B	11.8
	C	598.0
	E	11.3
QF02	B	6.0
	C	11.0
	E	5.8
QF03	B	2.7
	C	4.3
	E	2.1
QF04	B	3.4
	C	11.8
	E	2.9
QF05	B	1.1
	C	3.4
	E	0.5
QF06	B	-11.2
	C	-5.2
	E	-11.6
QF07	B	5.8
	C	11.0
	E	5.3
QF08	B	5.1
	C	11.8
	E	4.5
QF09	B	1.5
	C	5.1
	E	0.9
QF10	B	10.2
	C	11.8
	E	9.5
QF11	B	10.5
	C	11.8
	E	10.2

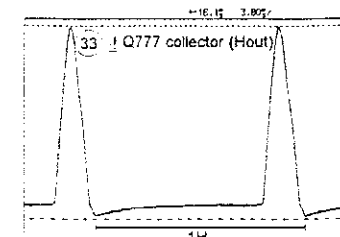
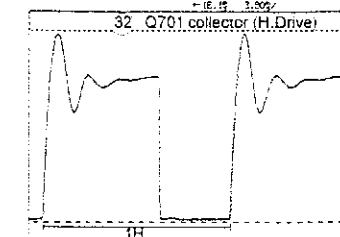
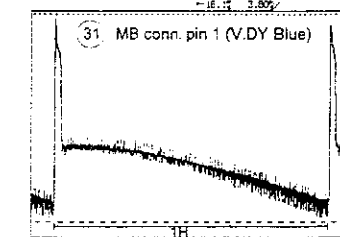
Circuit No.	Pin No.	Voltage VDC
QN01	B	0
	C	11.6
	E	0
QN02	B	0.9
	C	12.5
	E	0.5
QN03	B	12.5
	C	0
	E	12.5
QN04	B	0
	C	12.5
	E	0
QN05	B	-0.2
	C	0.6
	E	0
QN06	B	10.3
	C	0
	E	10.3



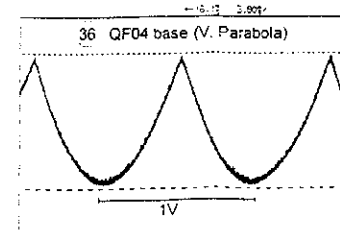
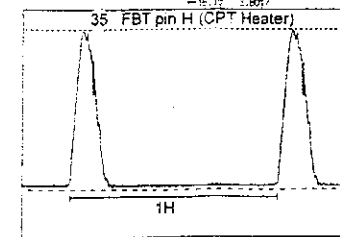
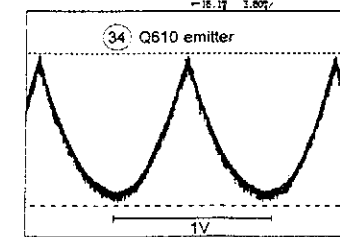
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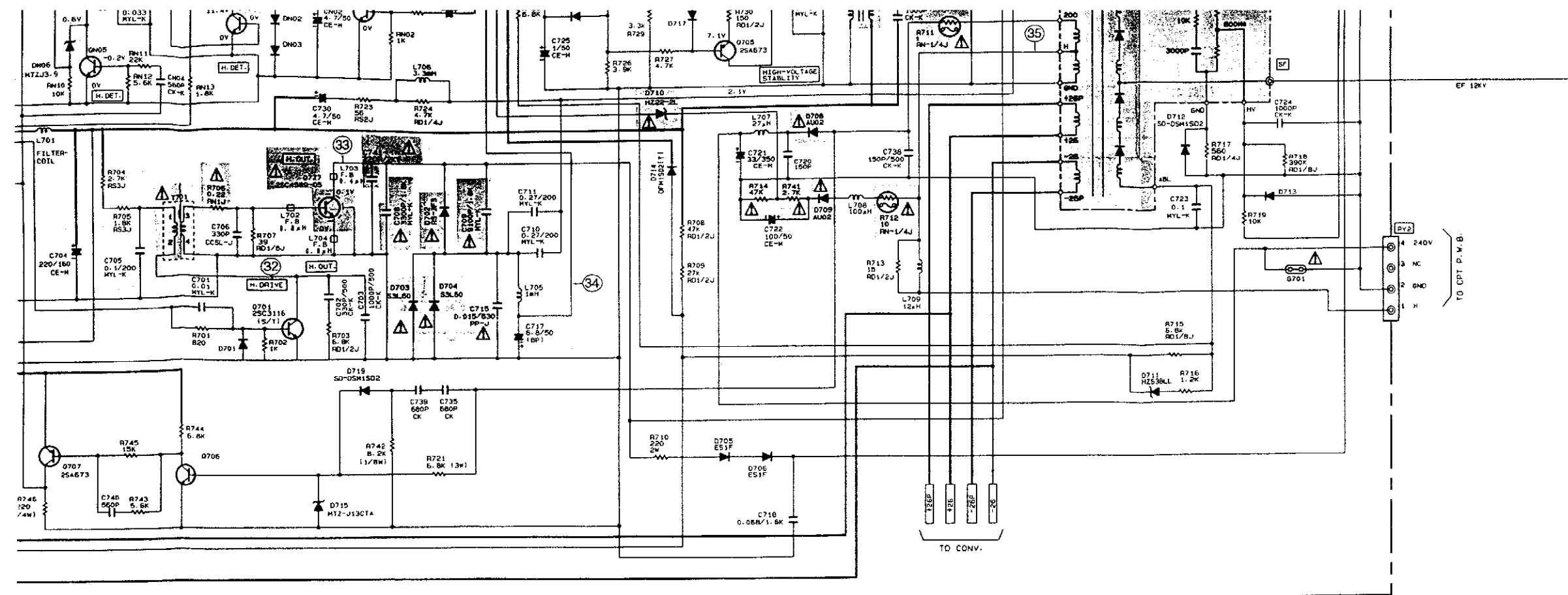


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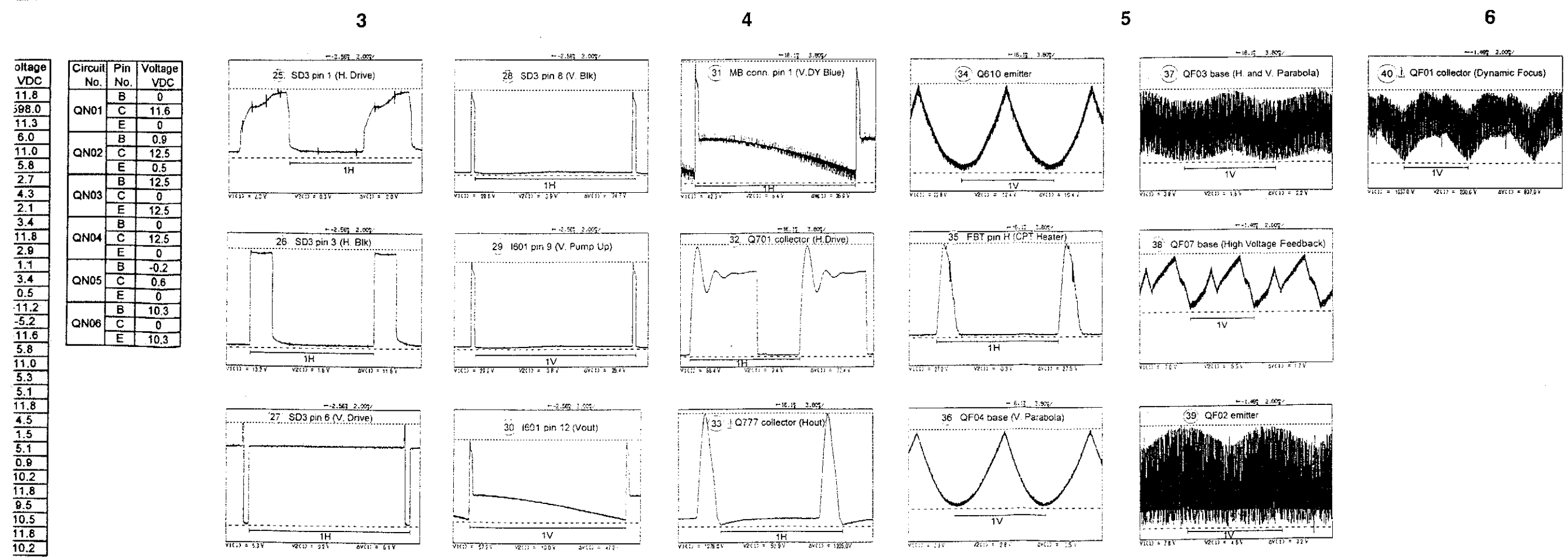


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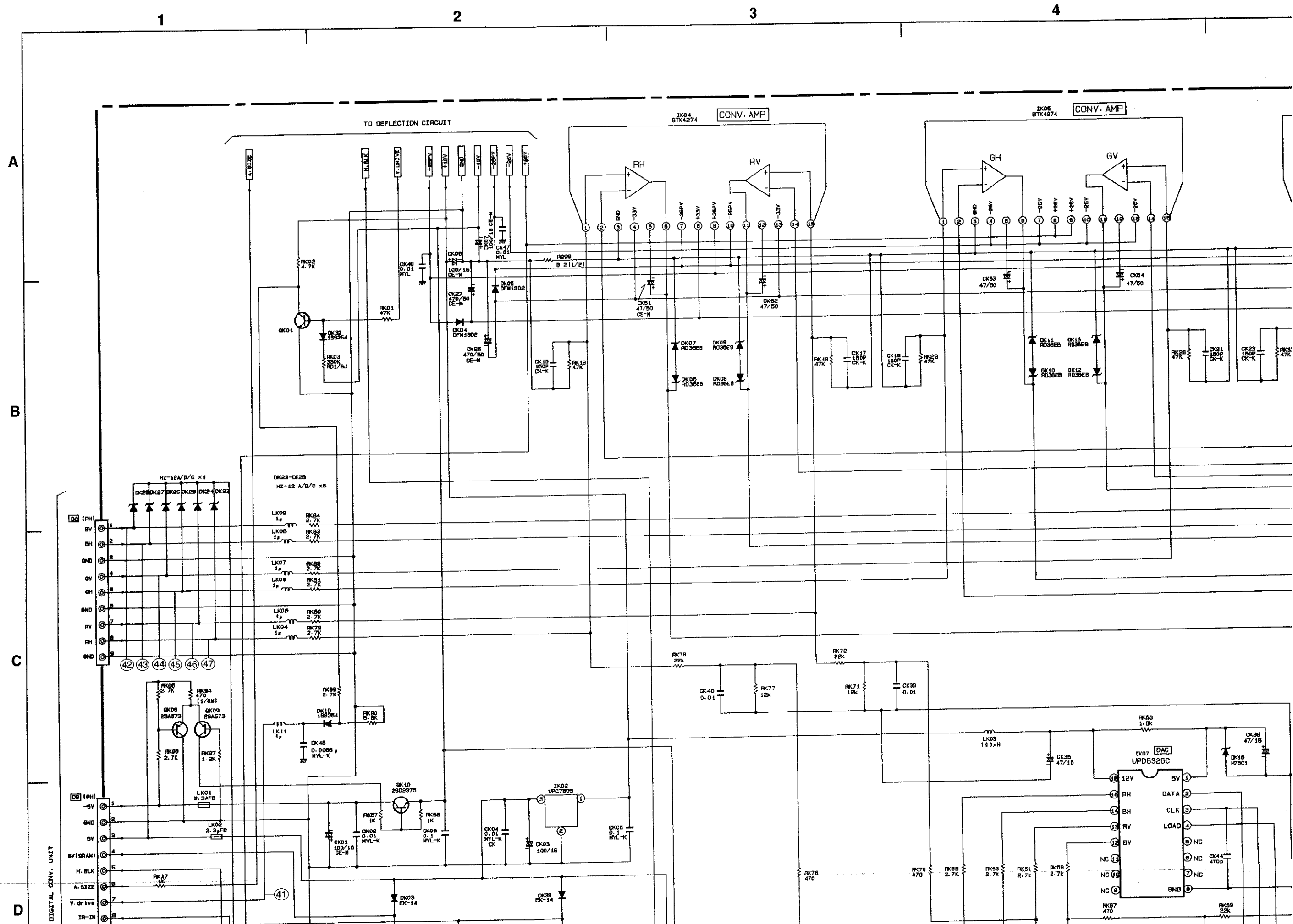
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

AP62 CHASSIS DEFLECTION



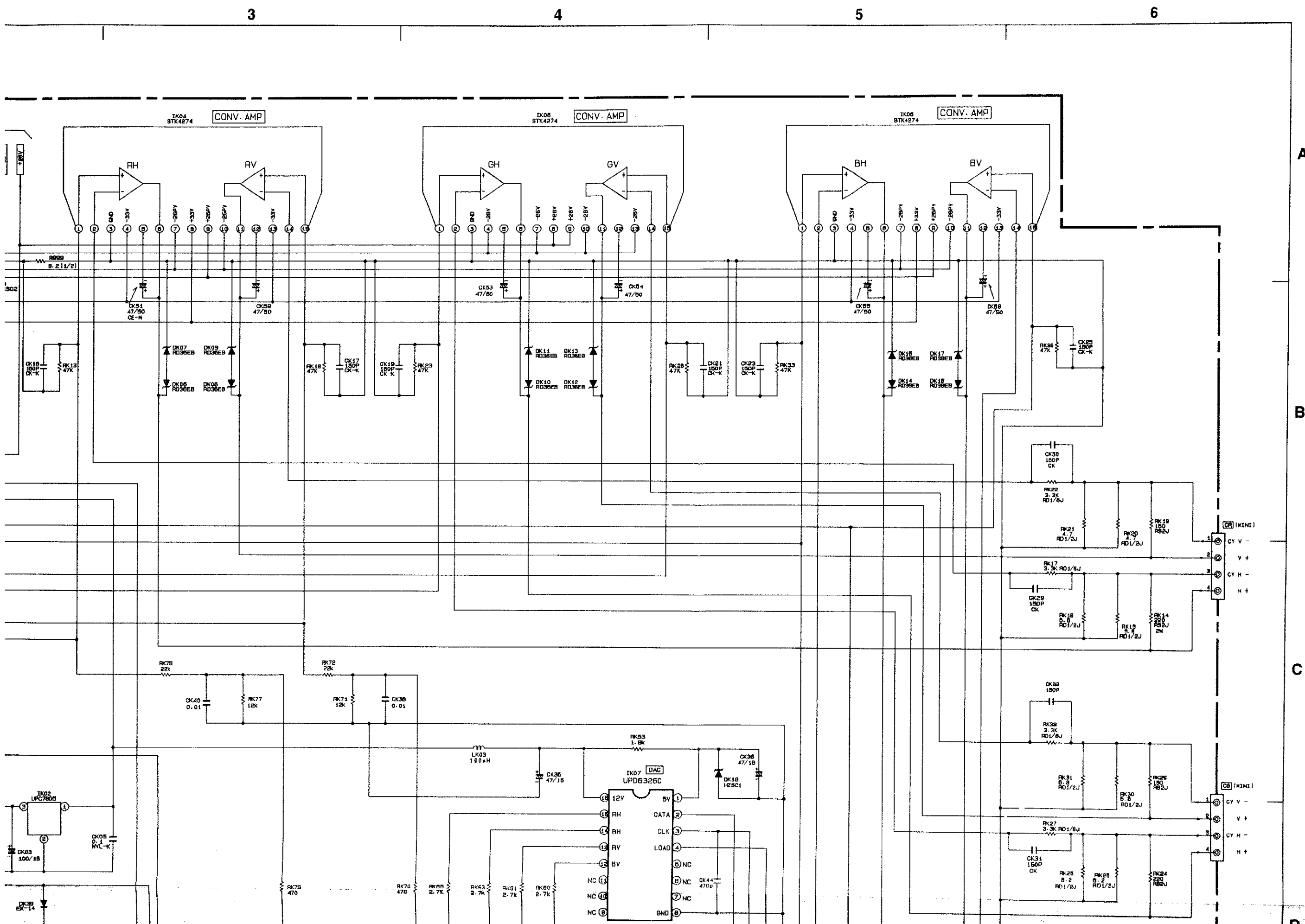
CHASSIS DEFL.
POWER DEFL.

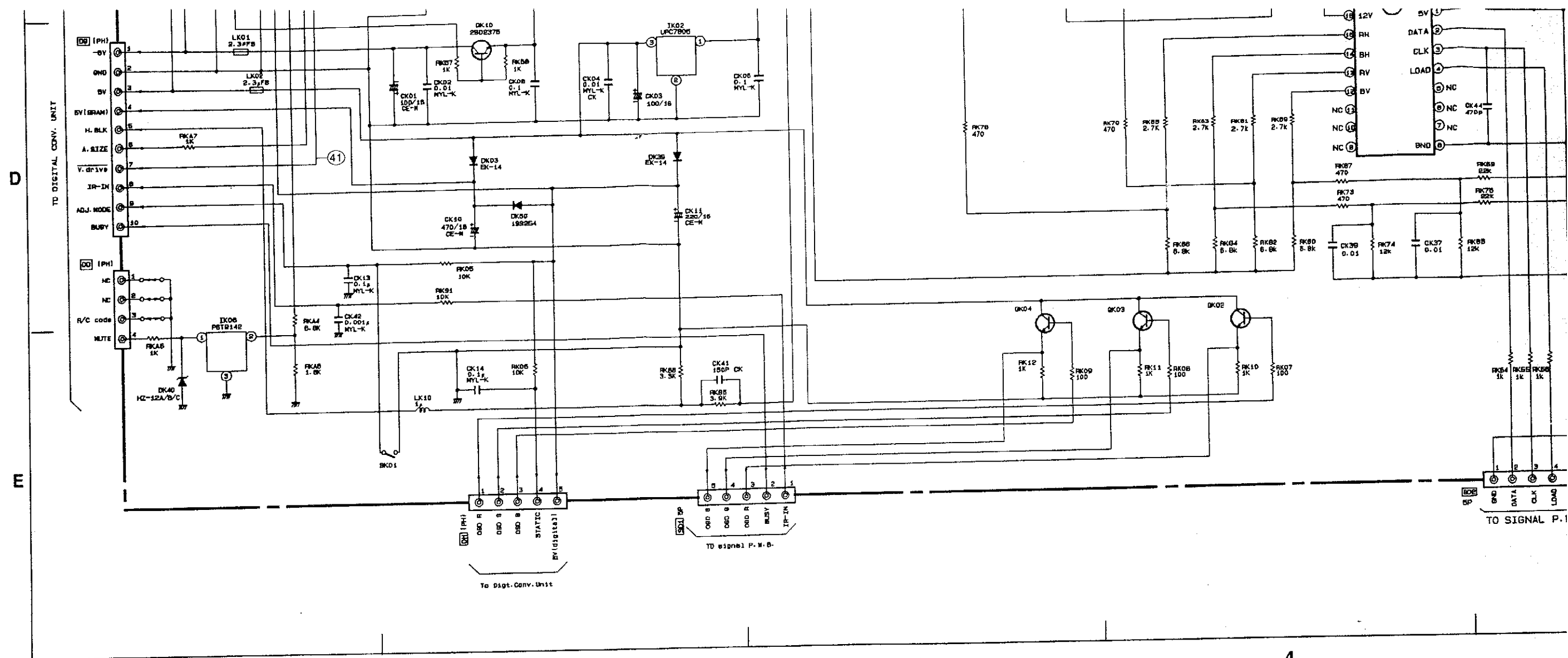
BASIC CIRCUIT DIAGRAM



BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a $\triangle$ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.





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- All DC voltage to be measured with
- Since this is a basic circuit diagram

Circuit No.	Pin No.	Voltage VDC
IK02	1	11.8
	2	0
	3	4.9

Circuit No.	Pin No.	Voltage VDC
IK04	1	0.2
	2	0.2
	3	0
	4	-32.9
	5	-22.2
	6	-0.3
	7	-26.5
	8	33.3
	9	27.0
	10	-26.5
	11	-0.4
	12	-22.5
	13	-32.9
	14	-0.3
	15	-0.3

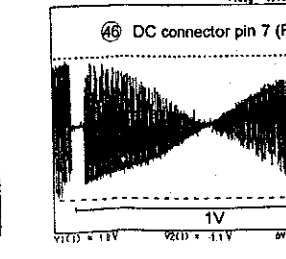
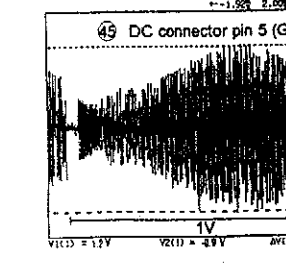
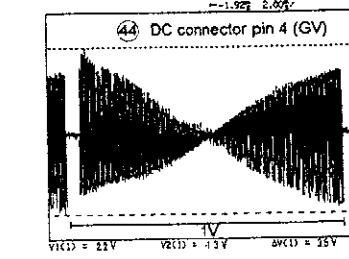
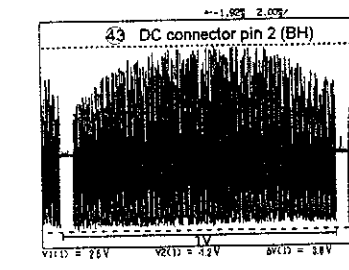
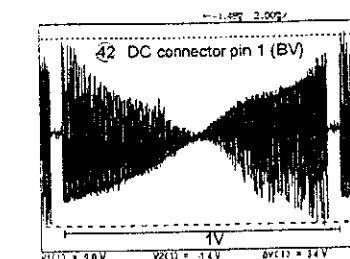
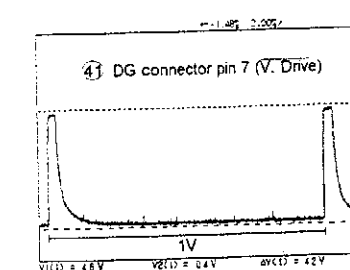
Circuit No.	Pin No.	Voltage VDC
IK05	1	0.3
	2	0.3
	3	0
	4	-26.5
	5	-17.8
	6	0.4
	7	-26.5
	8	27.0
	9	27.0
	10	-26.5
	11	-0.5
	12	-18.3
	13	-26.5
	14	-0.4
	15	-0.4

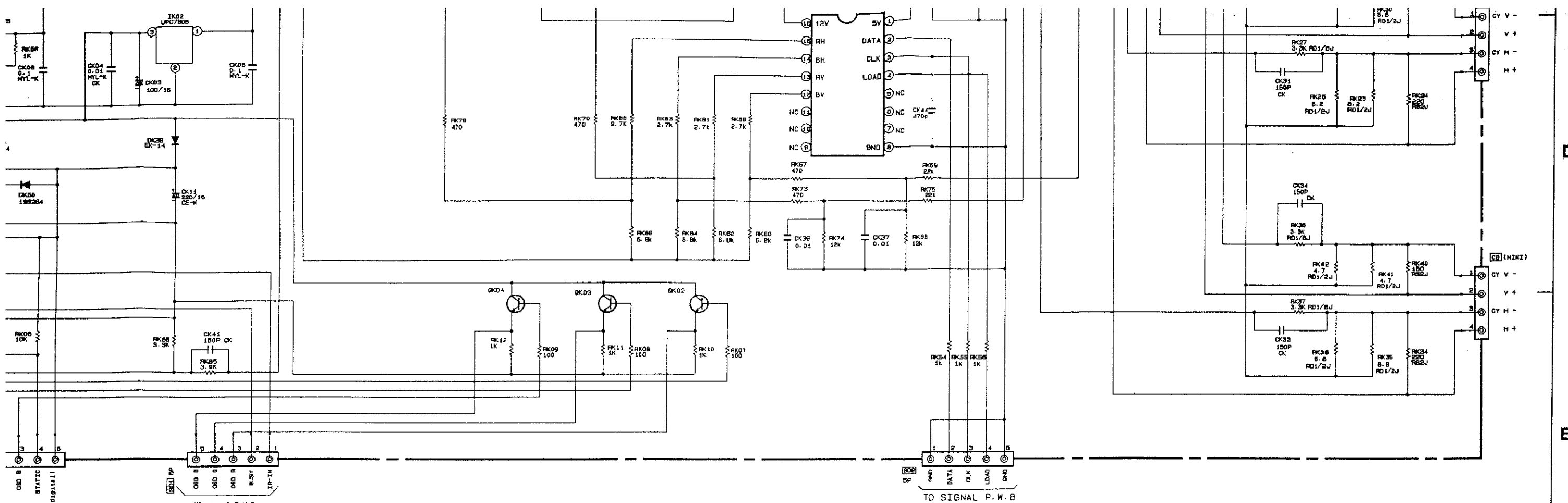
Circuit No.	Pin No.	Voltage VDC
IK06	1	-0.4
	2	-0.4
	3	0
	4	-32.9
	5	-22.5
	6	-0.4
	7	-26.5
	8	33.3
	9	27.0
	10	-26.5
	11	-0.4
	12	-22.5
	13	-32.9
	14	-0.3
	15	-0.3

Circuit No.	Pin No.	Voltage VDC
IK08	1	3.4
	2	5.7
	3	0

Circuit No.	Pin No.	Voltage VDC
IK07	1	5.0
	2	5.0
	3	5.0
	4	0
	5	0
	6	5.0
	7	0.5
	8	0
	9	4.5
	10	5.0
	11	5.0
	12	5.3
	13	5.3
	14	5.3
	15	5.1
	16	11.7

Circuit No.	Pin No.	Voltage VDC
QK01	B	0.6
	C	0.3
	E	0
QK02	B	0
	C	4.9
	E	0
QK03	B	0
	C	4.9
	E	0
QK04	B	0
	C	4.9
	E	0
QK08	B	-0.1
	C	0
	E	0.5
QK09	B	0
	C	-11.1
	E	0.5
QK10	B	-11.6
	C	-5.3
	E	-12.2





AP62 POWER DEFLECTION P.W.B.

2 3 4 5 6

- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

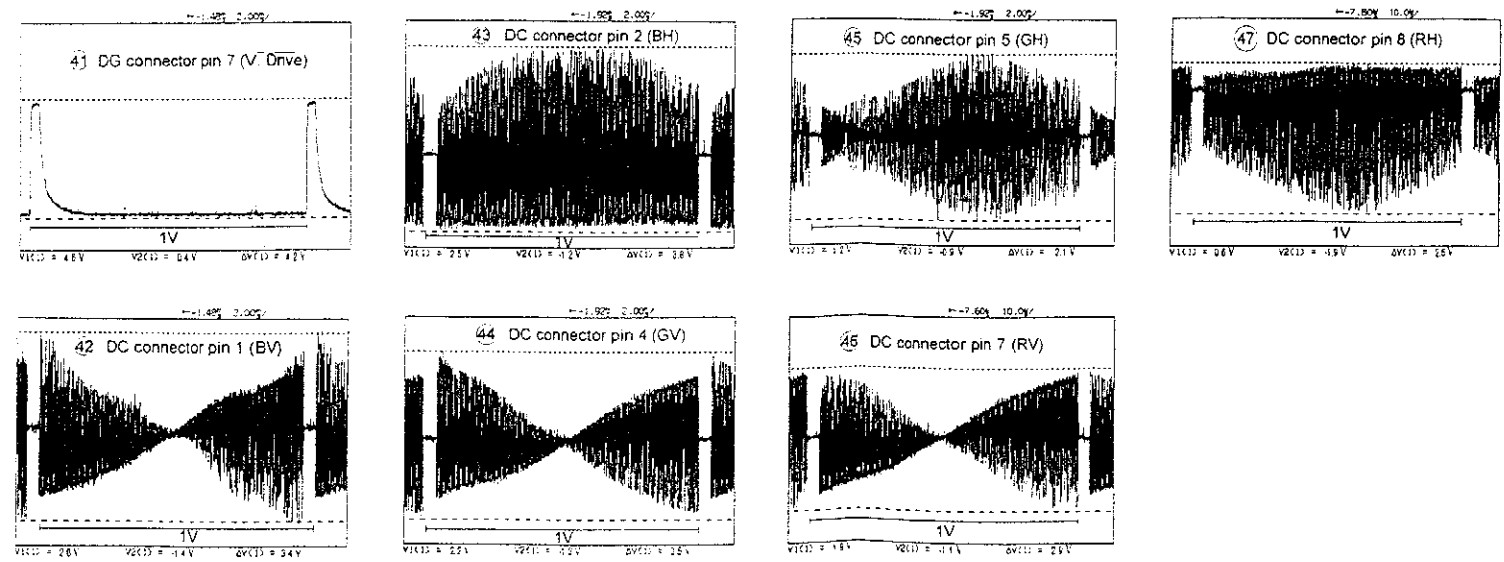
uit	Pin No.	Voltage VDC
1	0.3	
2	0.3	
3	0	
4	-26.5	
5	-17.8	
6	0.4	
7	-26.5	
8	27.0	
9	27.0	
10	-26.5	
11	-0.5	
12	-18.3	
13	-26.5	
14	-0.4	
15	-0.4	

Circuit No.	Pin No.	Voltage VDC
IK06	1	-0.4
IK06	2	-0.4
IK06	3	0
IK06	4	-32.9
IK06	5	-22.5
IK06	6	-0.4
IK06	7	-26.5
IK06	8	33.3
IK06	9	27.0
IK06	10	-26.5
IK06	11	-0.4
IK06	12	-22.5
IK06	13	-32.9
IK06	14	-0.3
IK06	15	-0.3

Circuit No.	Pin No.	Voltage VDC
IK07	1	5.0
IK07	2	5.0
IK07	3	5.0
IK07	4	0
IK07	5	0
IK07	6	5.0
IK07	7	0.5
IK07	8	0
IK07	9	4.5
IK07	10	5.0
IK07	11	5.0
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IK07	13	5.3
IK07	14	5.3
IK07	15	5.1
IK07	16	11.7

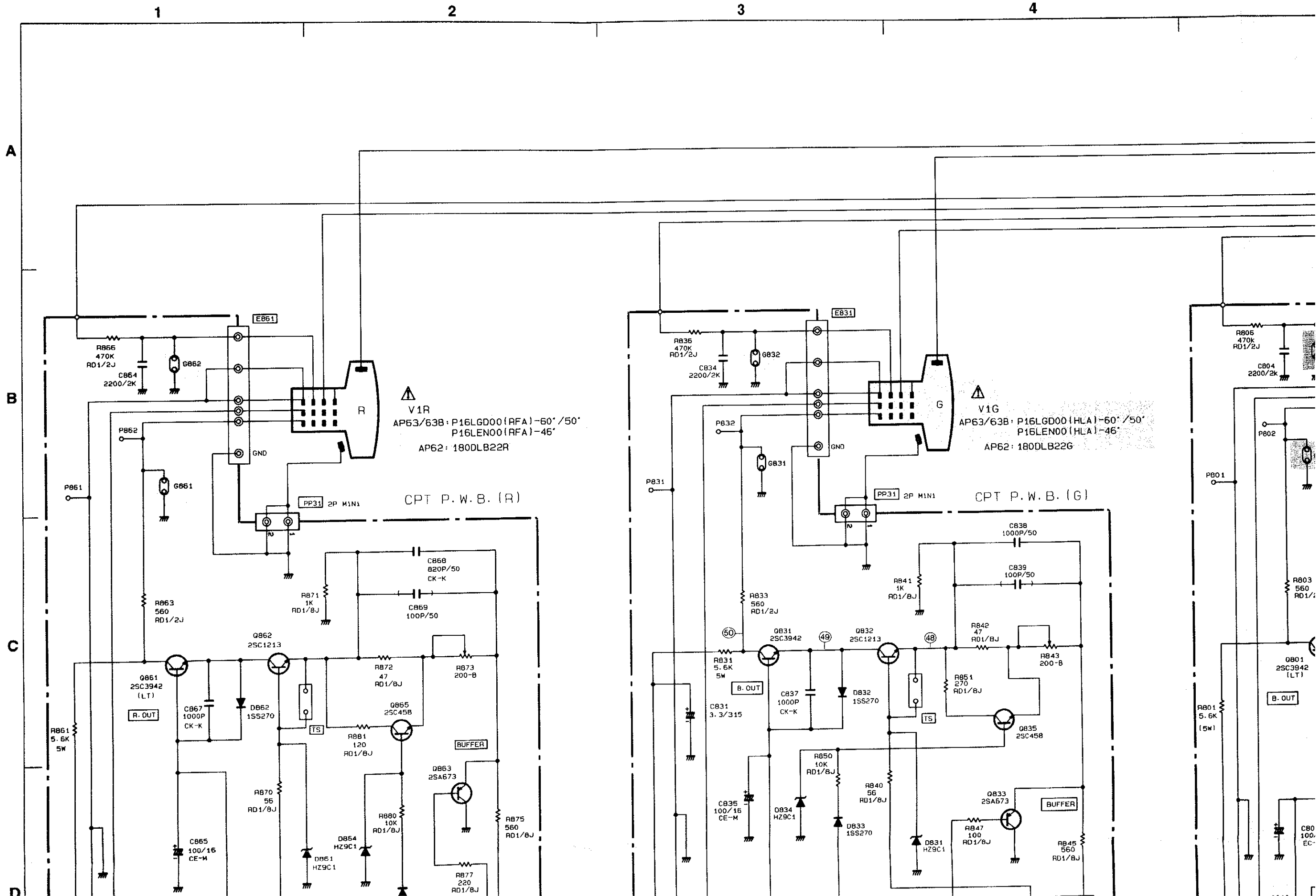
Circuit No.	Pin No.	Voltage VDC
IK08	1	3.4
IK08	2	5.7
IK08	3	0

Circuit No.	Pin No.	Voltage VDC
QK01	B	0.6
QK01	C	0.3
QK01	E	0
QK02	B	0
QK02	C	4.9
QK02	E	0
QK03	B	0
QK03	C	4.9
QK03	E	0
QK04	B	0
QK04	C	4.9
QK04	E	0
QK08	B	-0.1
QK08	C	0
QK08	E	0.5
QK09	B	0
QK09	C	-11.1
QK09	E	0.5
QK10	B	-11.6
QK10	C	-5.3
QK10	E	-12.2



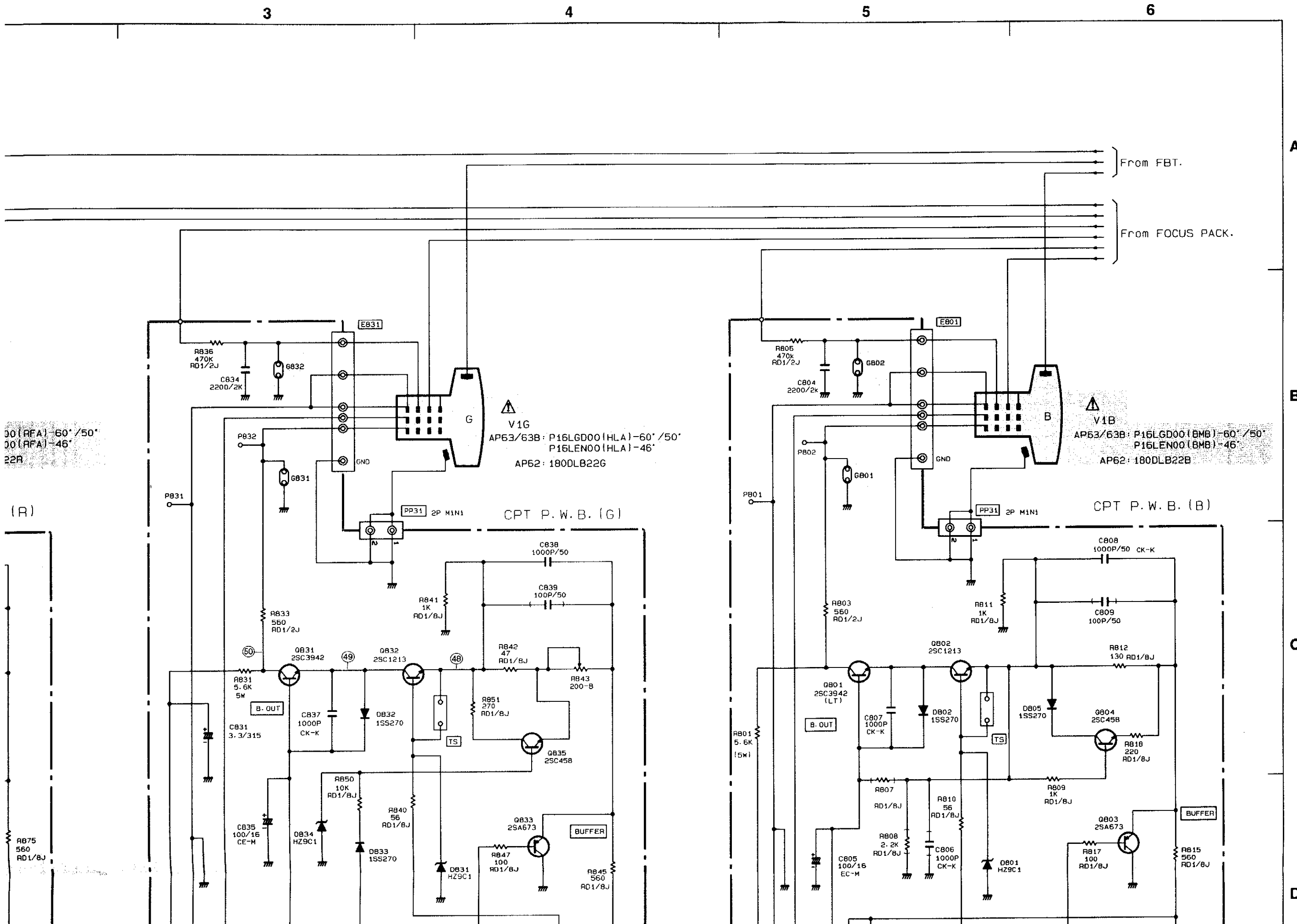
BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components ma
safety. Before replacing any of these compon
Manual. Don't degrade the safety of the recei



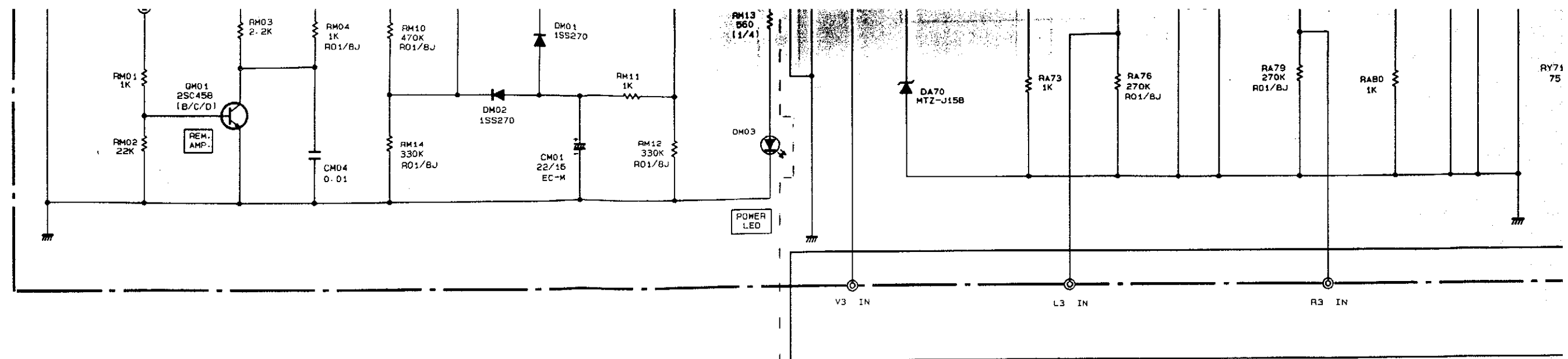
BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.



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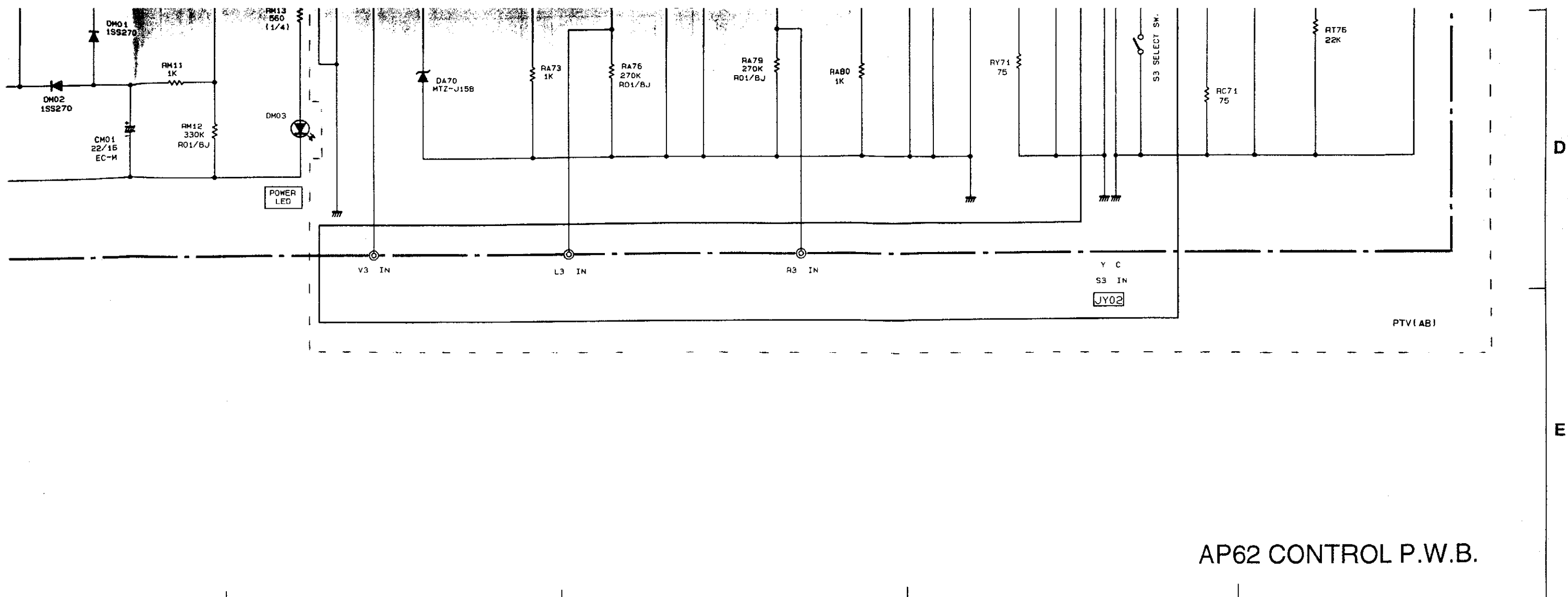
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Circuit No.	Pin No.	Voltage VDC
QM01	B	0.7
	C	0.1
	E	0
QM02	B	---
	C	1.6
	E	9.1

- All DC voltage to be measured with a
- Since this is a basic circuit diagram, t



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Circuit No.	Pin No.	Voltage VDC
QM01	B	0.7
	C	0.1
	E	0
QM02	B	—
	C	1.6
	E	9.1

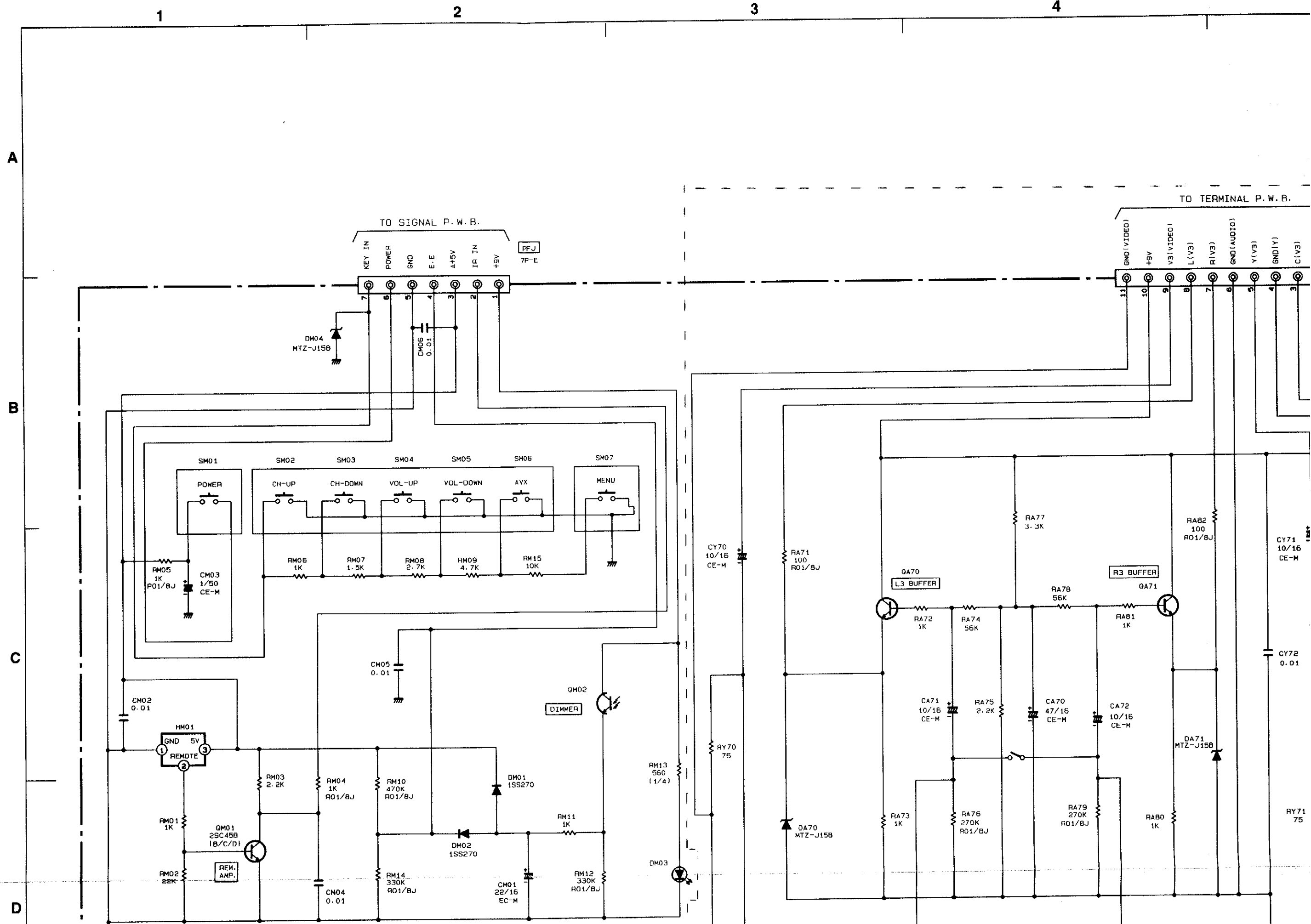
- All DC voltage to be measured with a tester (100k Ω /V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

50FX18B
50FX19K
55FX20B

CPT CONTROL

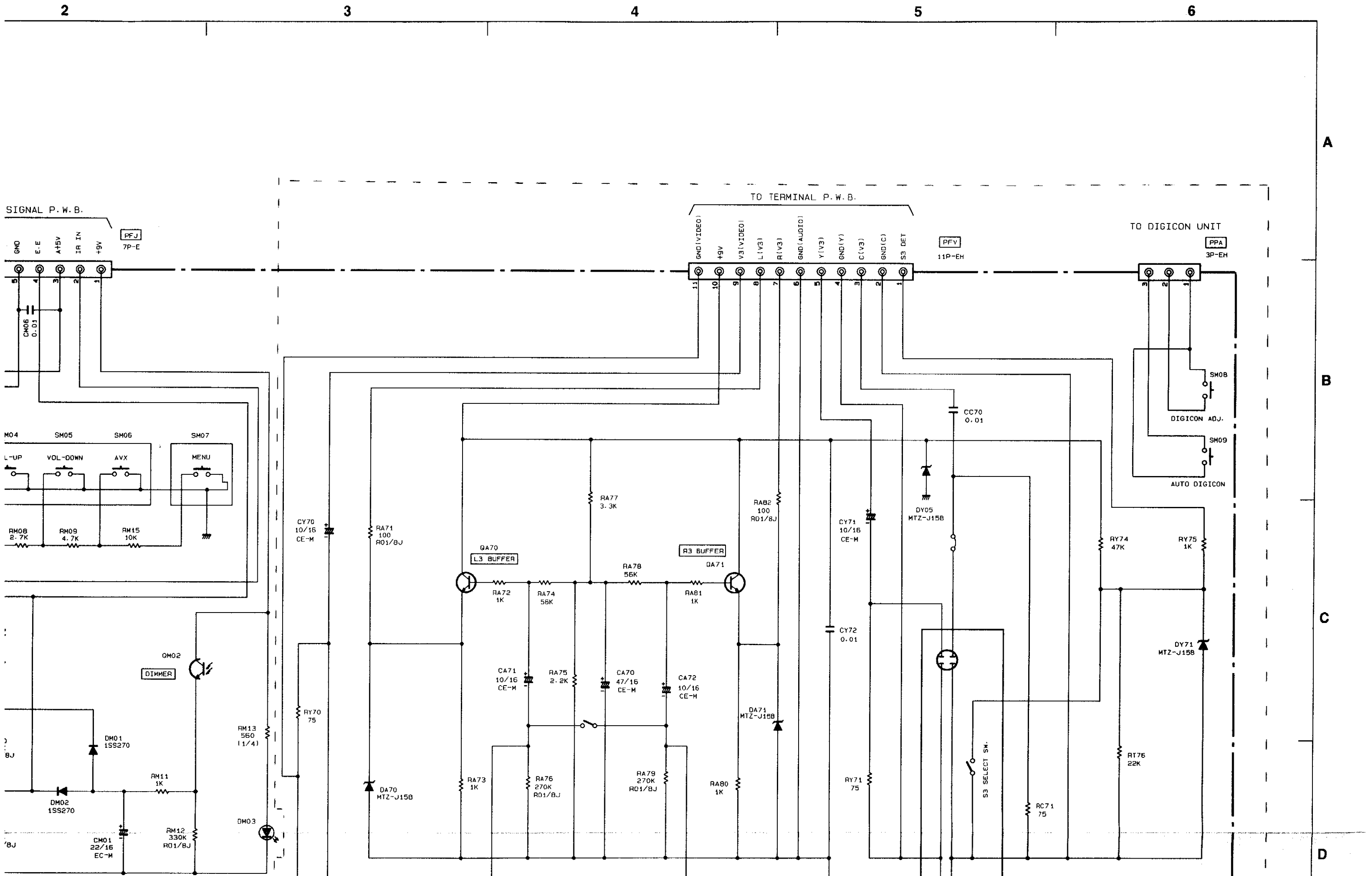
BASIC CIRCUIT DIAGRAM

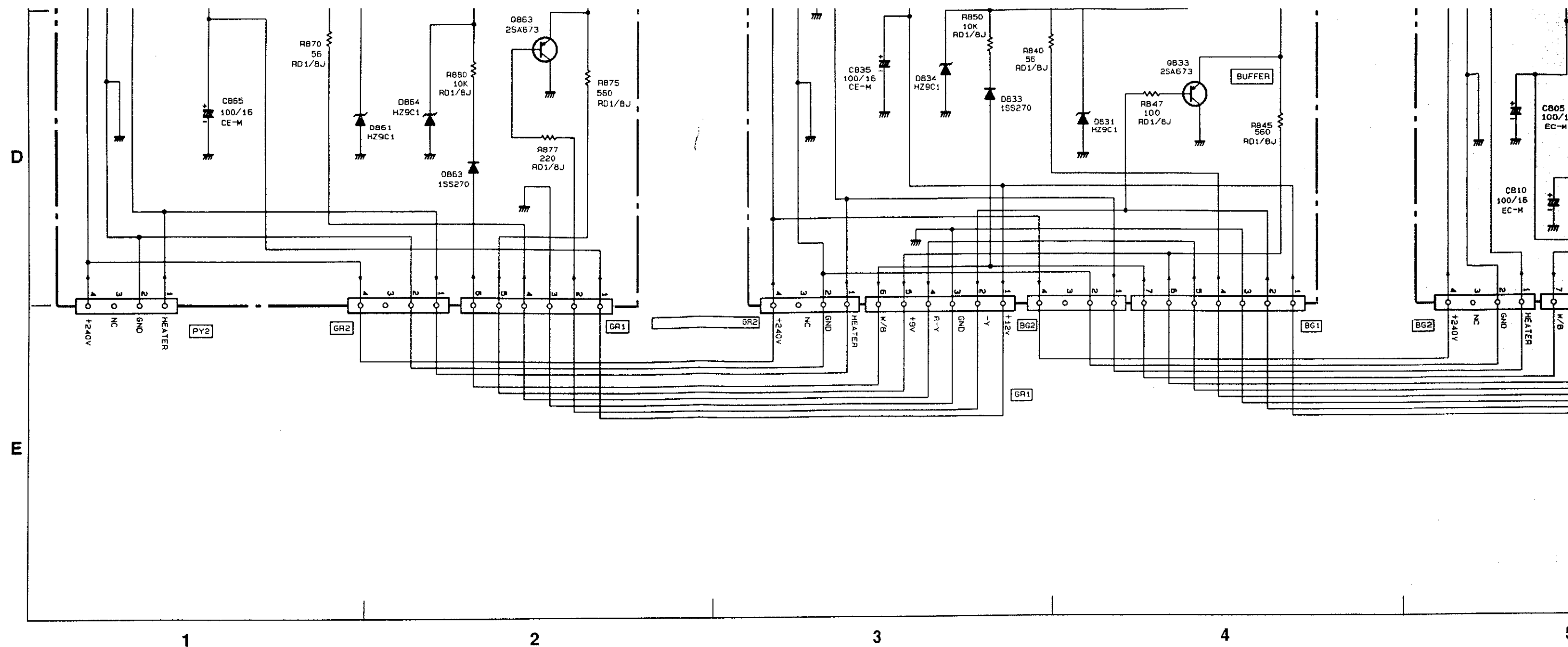
PRODUCT SAFETY NOTE: Component safety. Before replacing any of these Manual. Don't degrade the safety of



BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

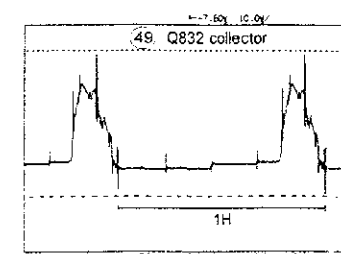
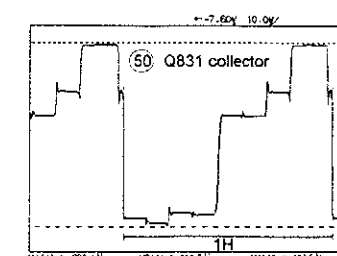
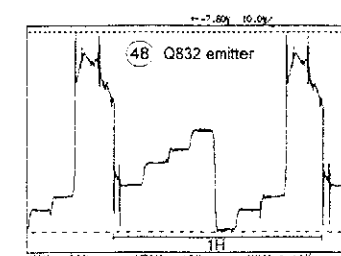


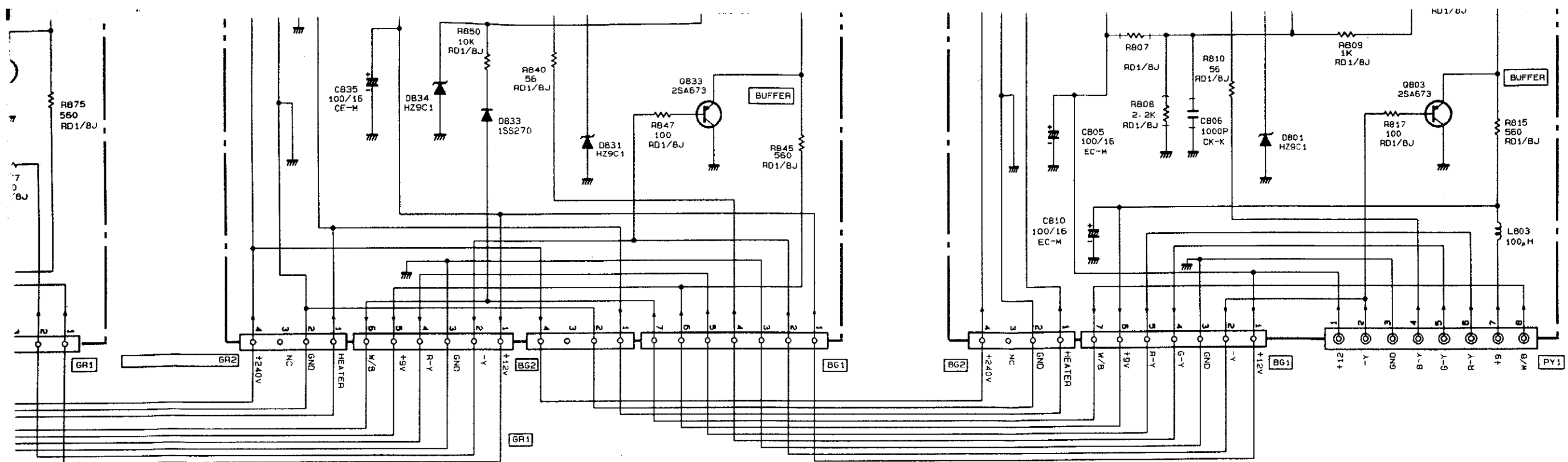


- All DC voltage to be measured with a tester (100k)
- Since this is a basic circuit diagram, the value of t

Circuit No.	Pin No.	Voltage VDC
Q801	B	11.8
	C	172.8
	E	11.2
Q802	B	5.3
	C	11.2
	E	4.9
Q803	B	4.1
	C	0
	E	4.2
Q804	B	4.8
	C	4.5
	E	4.6
Q831	B	11.8
	C	175.8
	E	11.3
Q832	B	5.2
	C	11.2
	E	4.8

Circuit No.	Pin No.	Voltage VDC
Q833	B	4.1
	C	0
	E	4.2
Q835	B	1.9
	C	4.8
	E	4.5
Q861	B	11.8
	C	191.2
	E	11.2
Q862	B	5.1
	C	11.2
	E	4.7
Q863	B	4.1
	C	0
	E	4.2
Q865	B	2.3
	C	4.7
	E	4.5





AP62 CPT P.W.B.

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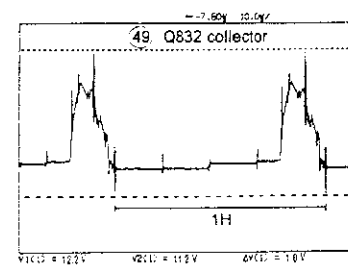
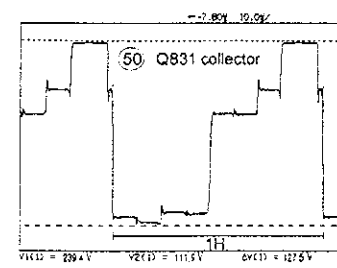
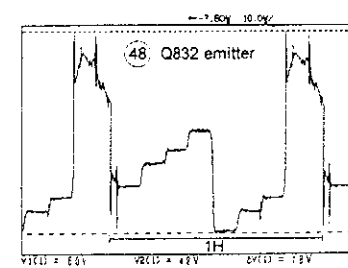
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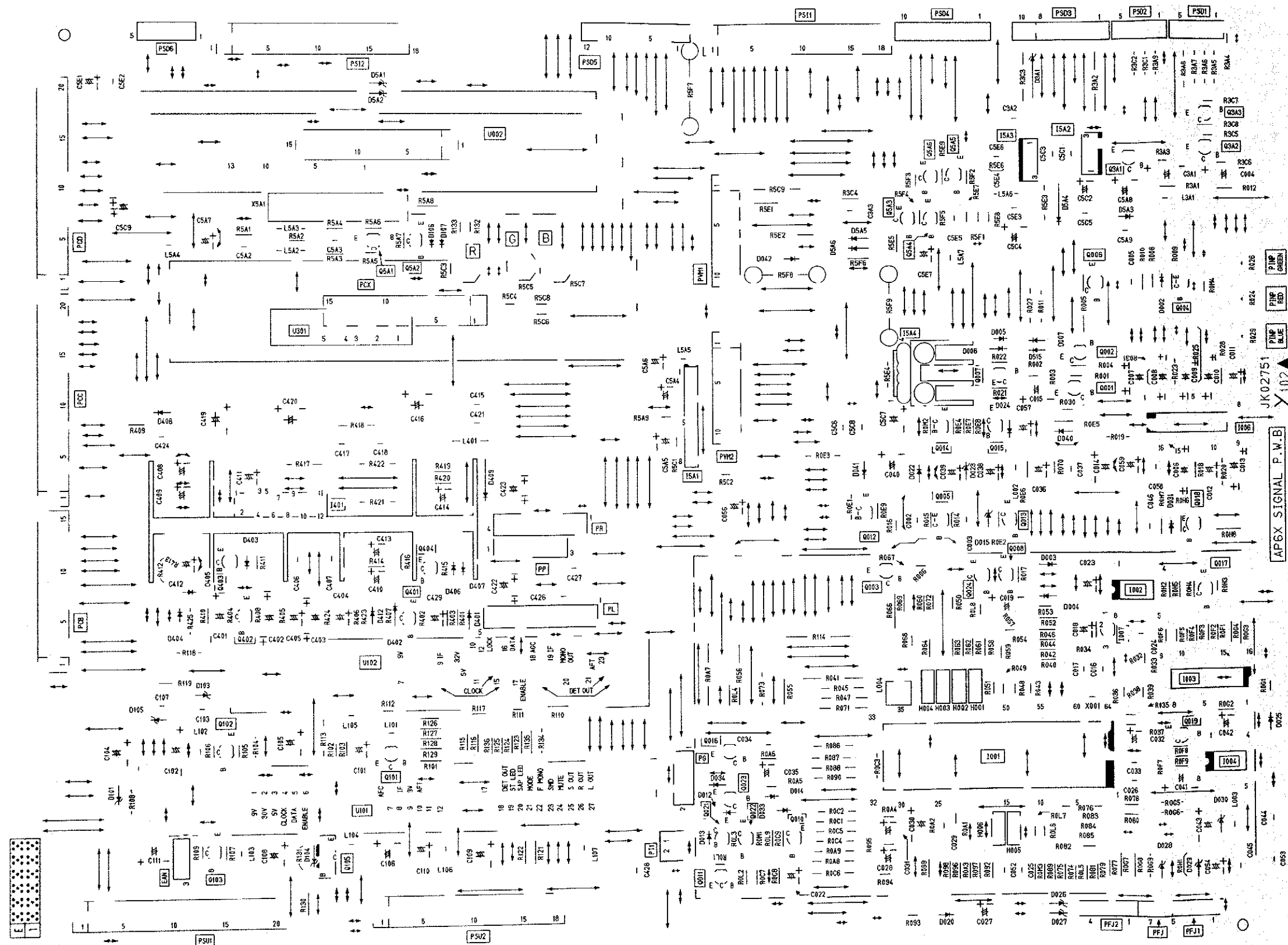
6

- All DC voltage to be measured with a tester (100k Ω /V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

Circuit No.	Pin No.	Voltage VDC
Q801	B	11.8
	C	172.8
	E	11.2
Q802	B	5.3
	C	11.2
	E	4.9
Q803	B	4.1
	C	0
	E	4.2
Q804	B	4.8
	C	4.5
	E	4.6
Q831	B	11.8
	C	175.8
	E	11.3
Q832	B	5.2
	C	11.2
	E	4.8

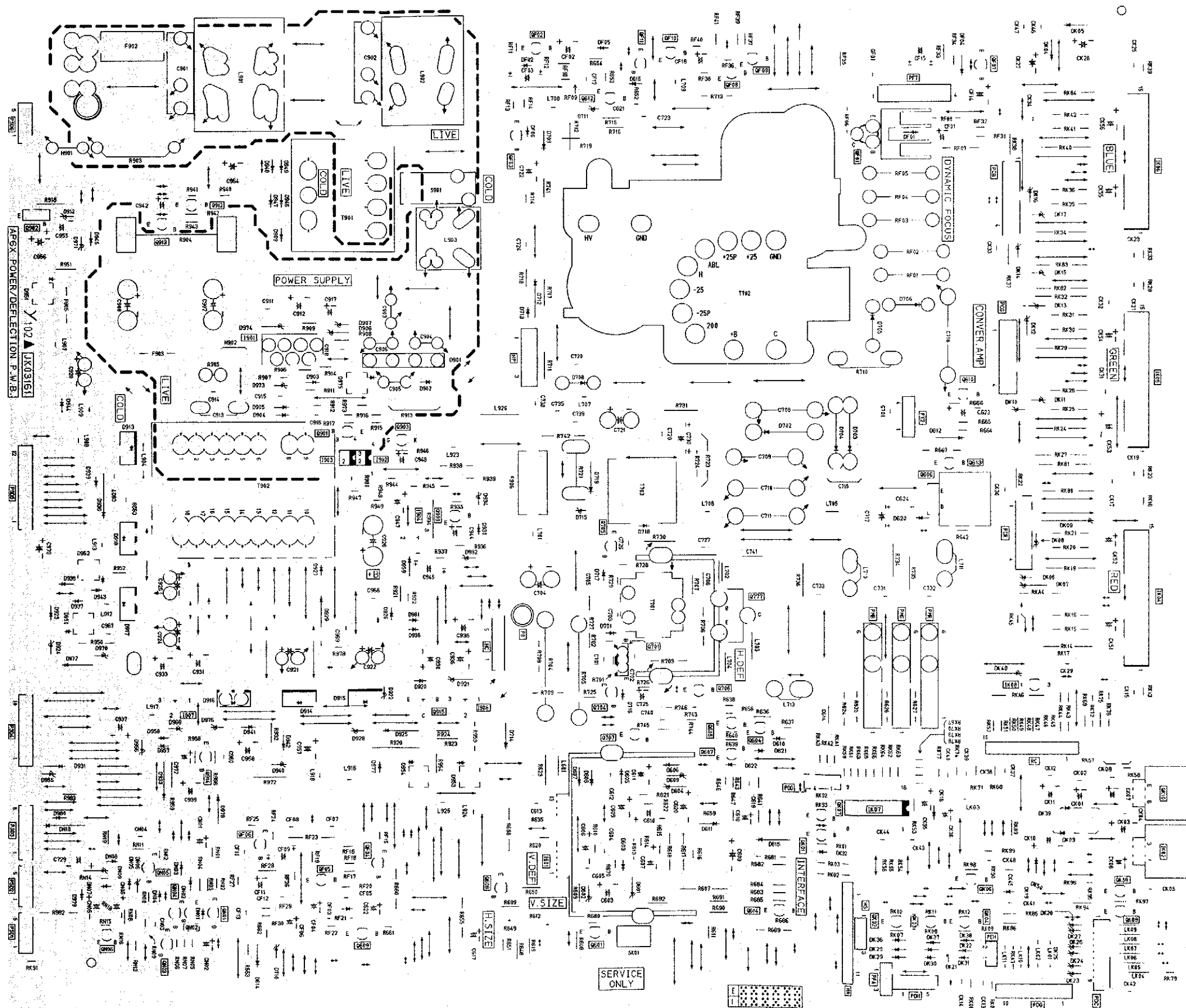
Circuit No.	Pin No.	Voltage VDC
Q833	B	4.1
	C	0
	E	4.2
Q835	B	1.9
	C	4.8
	E	4.5
Q861	B	11.8
	C	191.2
	E	11.2
Q862	B	5.1
	C	11.2
	E	4.7
Q863	B	4.1
	C	0
	E	4.2
Q865	B	2.3
	C	4.7
	E	4.5



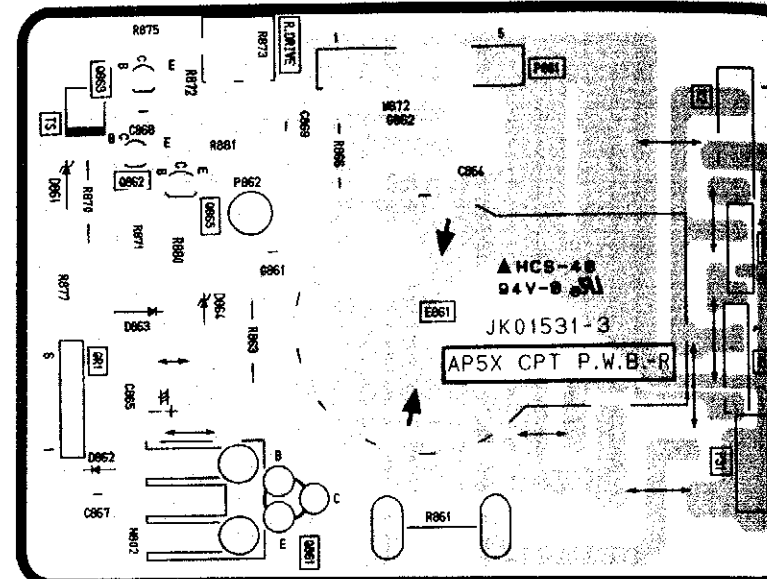


PRINTED CIRCUIT BOARD

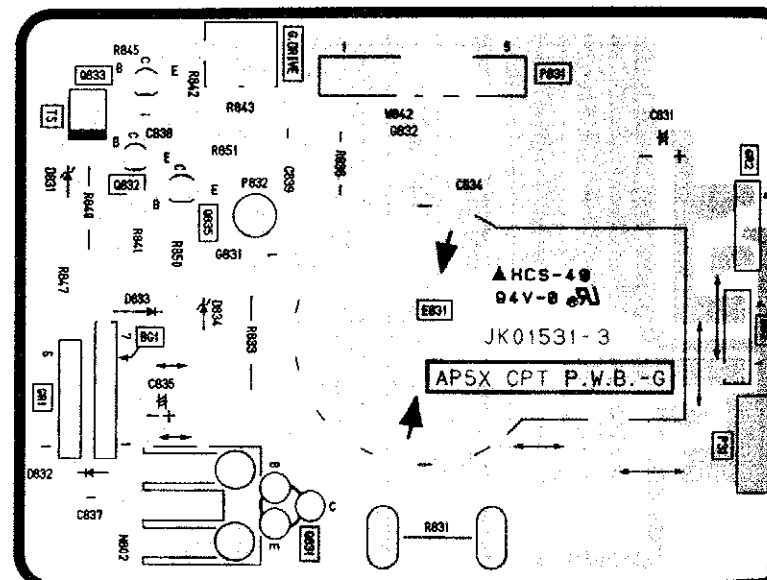
POWER/DEFLECTION P.C.B.



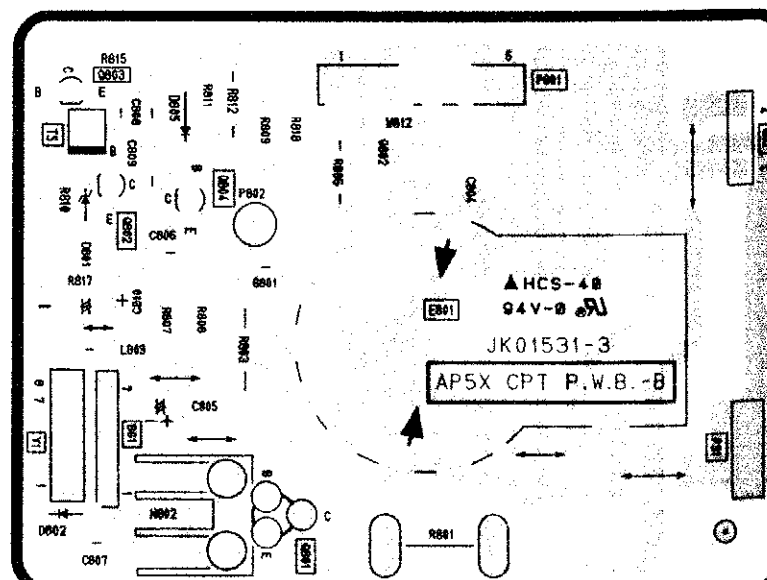
RED CPT P.C.B.



GREEN CPT P.C.B.



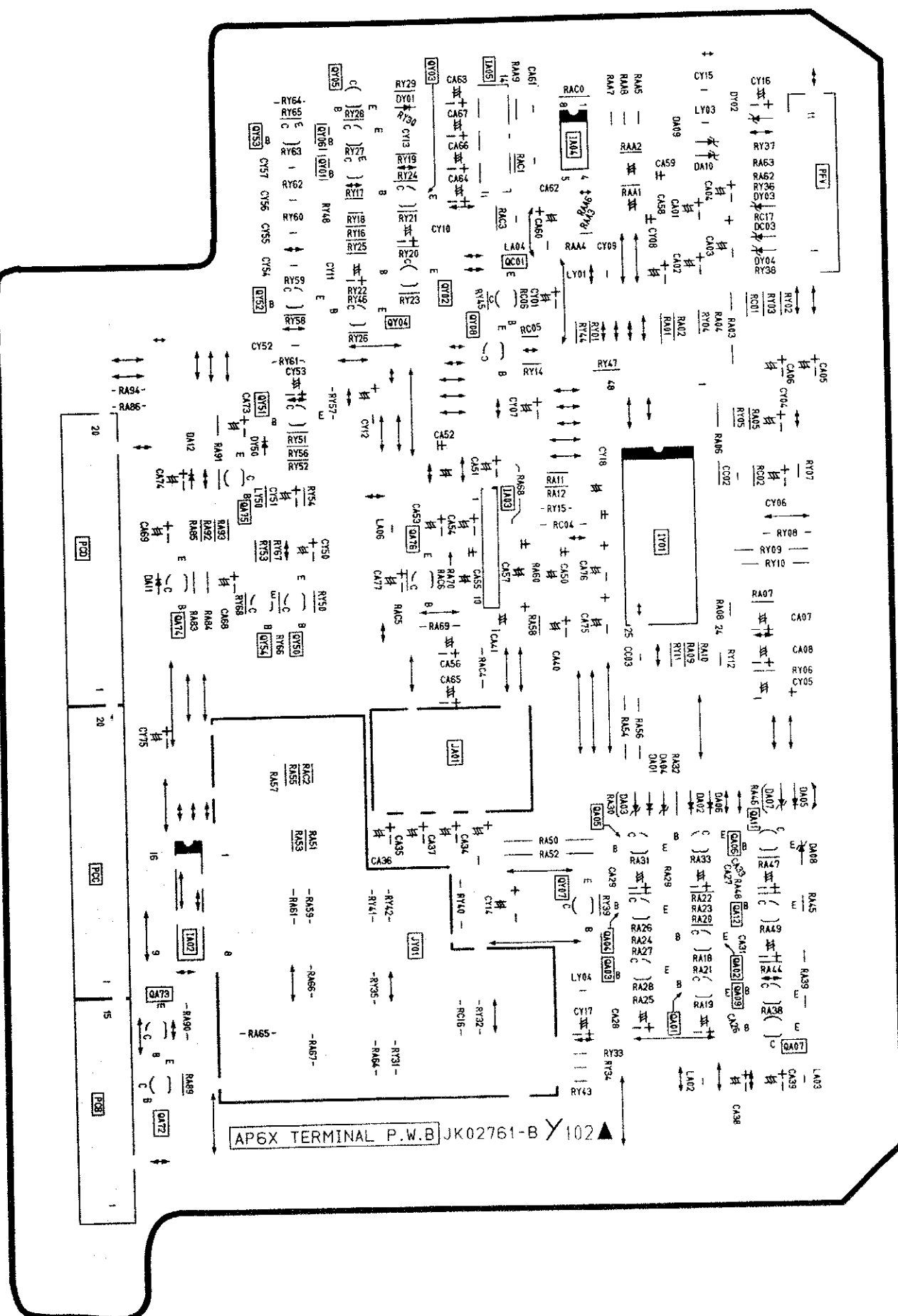
BLUE CPT P.C.B.



[illegible]

50FX18B
50FX19K
55FX20B

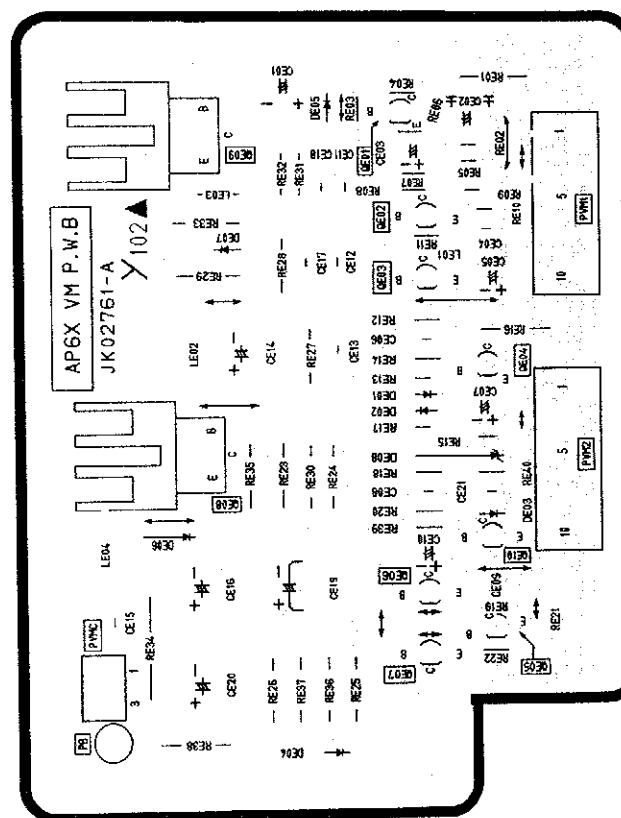
PRINTED CIRCUIT BOARD



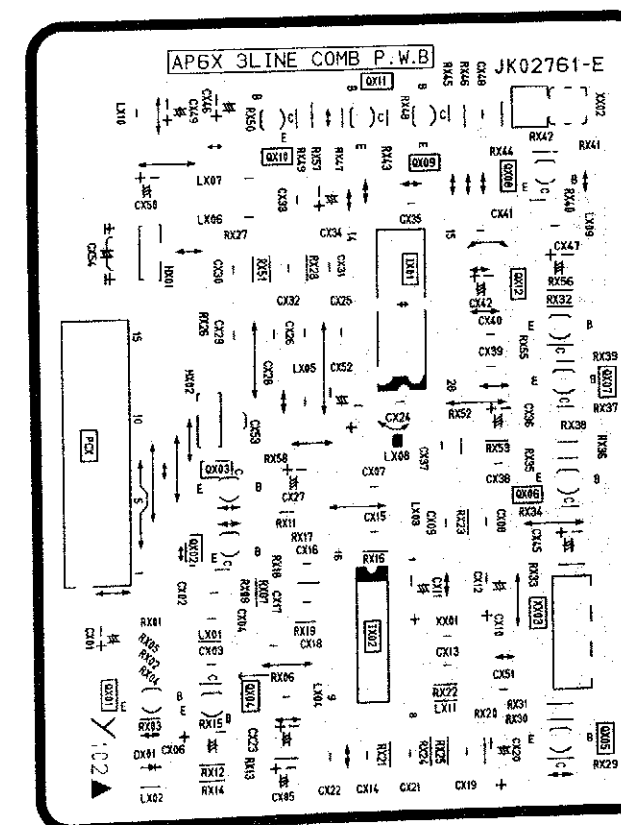
50FX18B
50FX19K
55FX20B

PRINTED CIRCUIT BOARD

VM P.C.B.

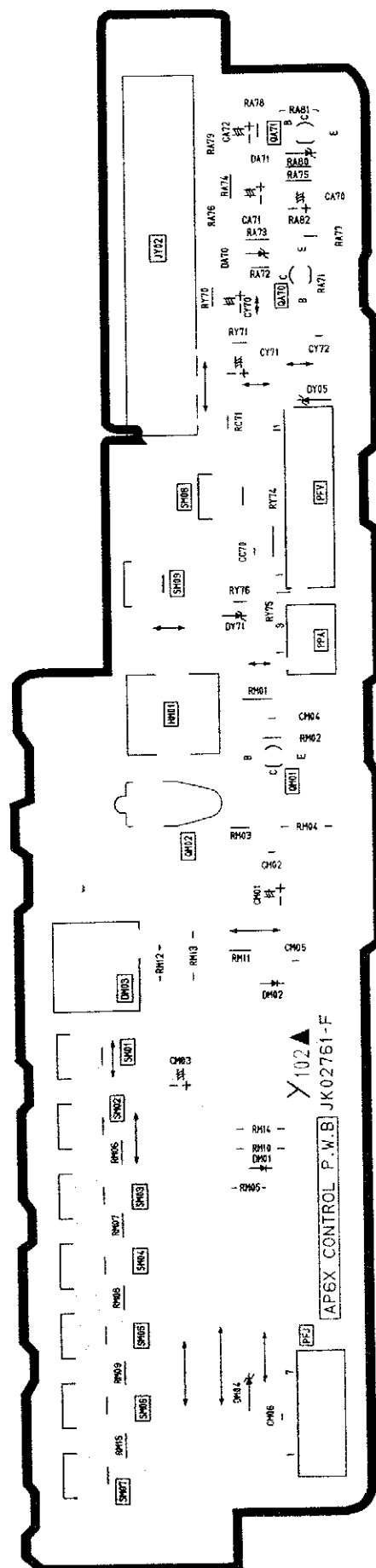


3 LINE COMB P.C.B.

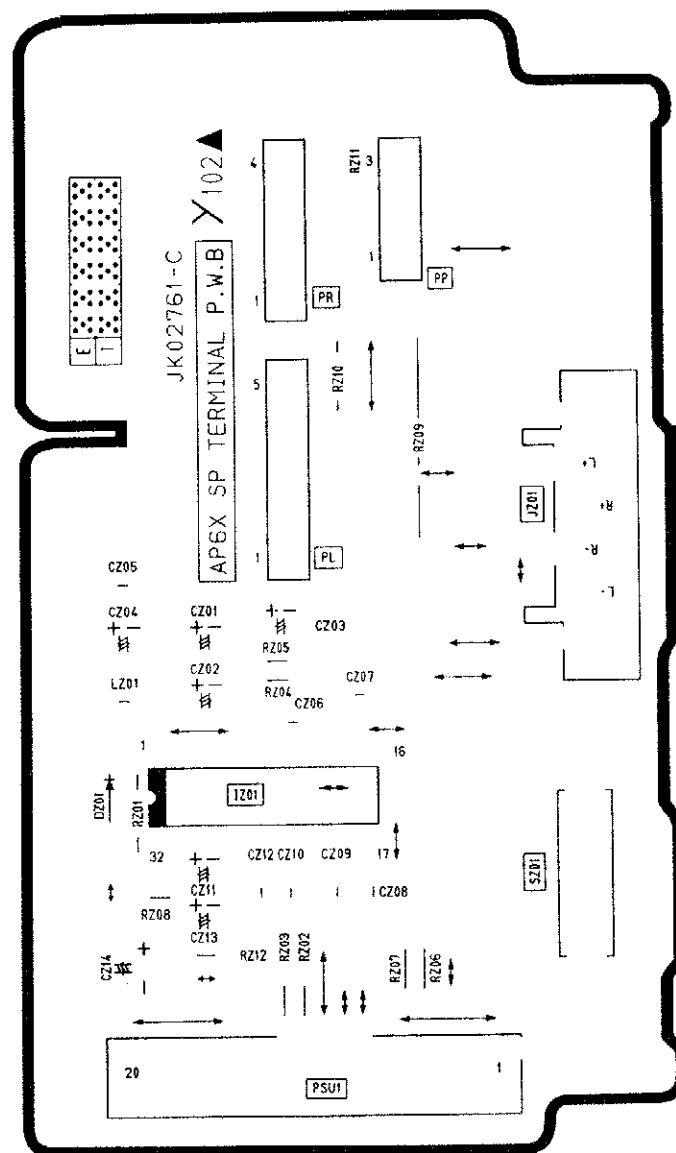


50FX18B
50FX19K
55FX20B

CONTROL P.C.B.



SP TERMINAL P.C.B.

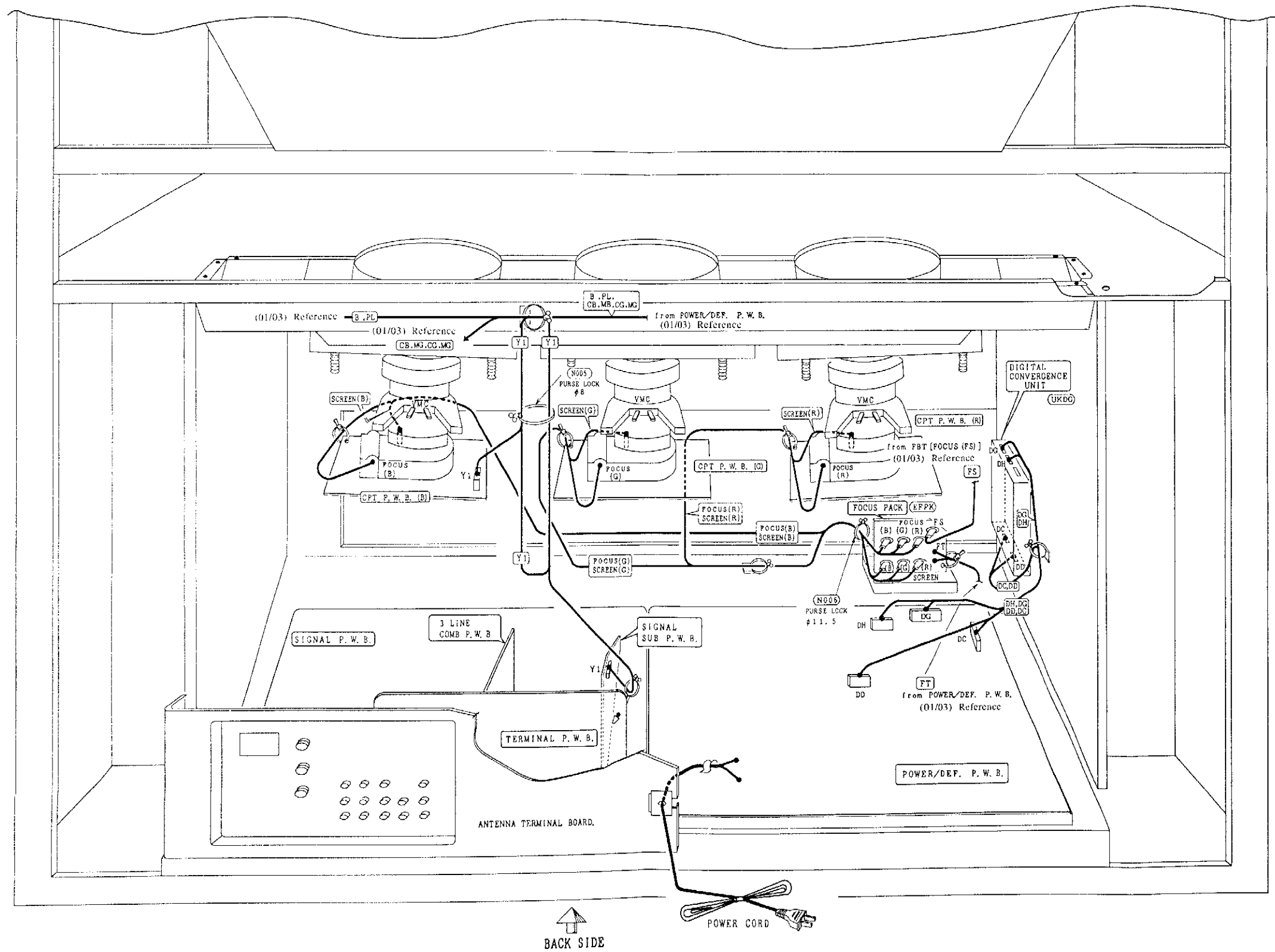






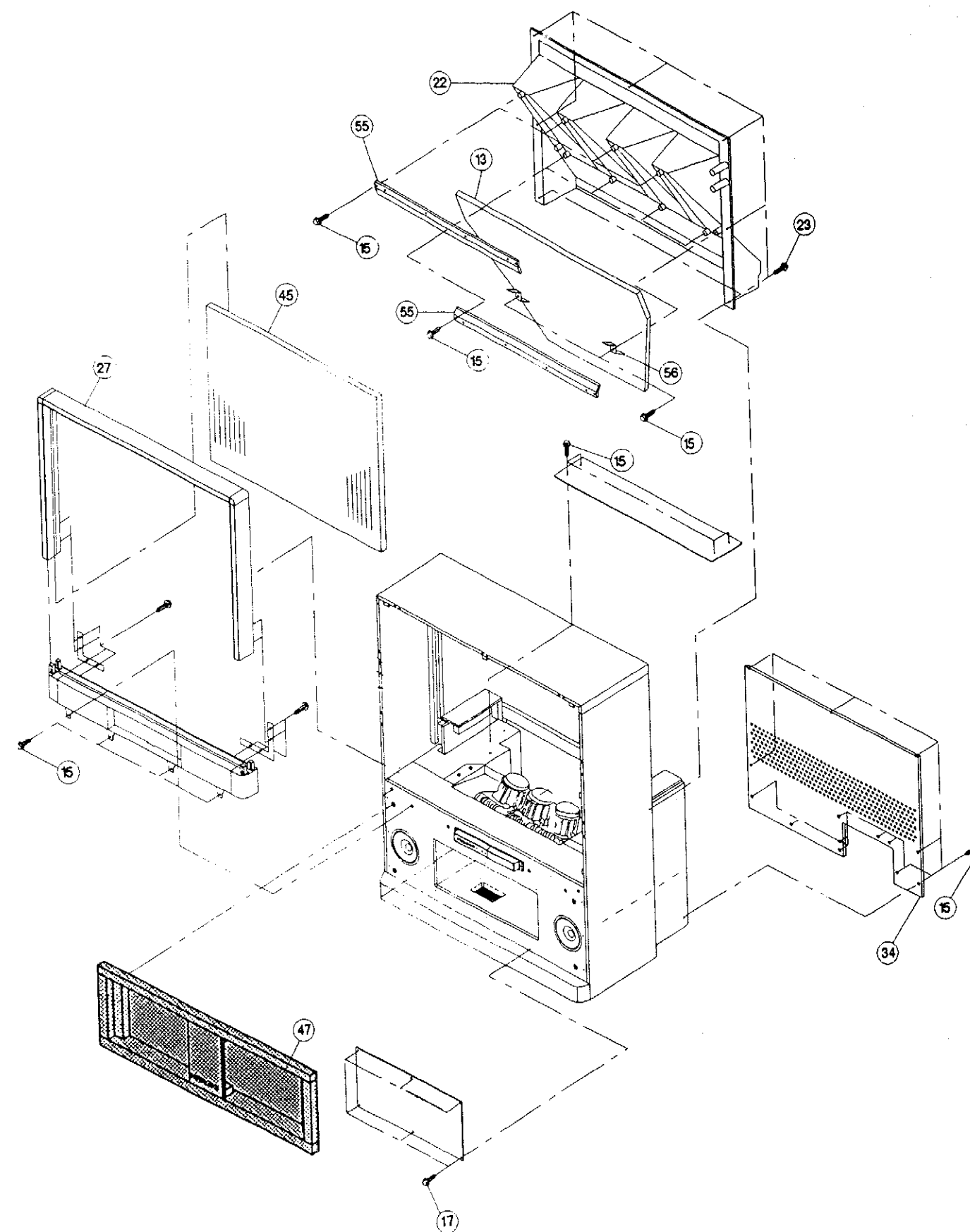
WIRE DRESS DRAWING (2/3)

50FX18B
50FX19K
55FX20B



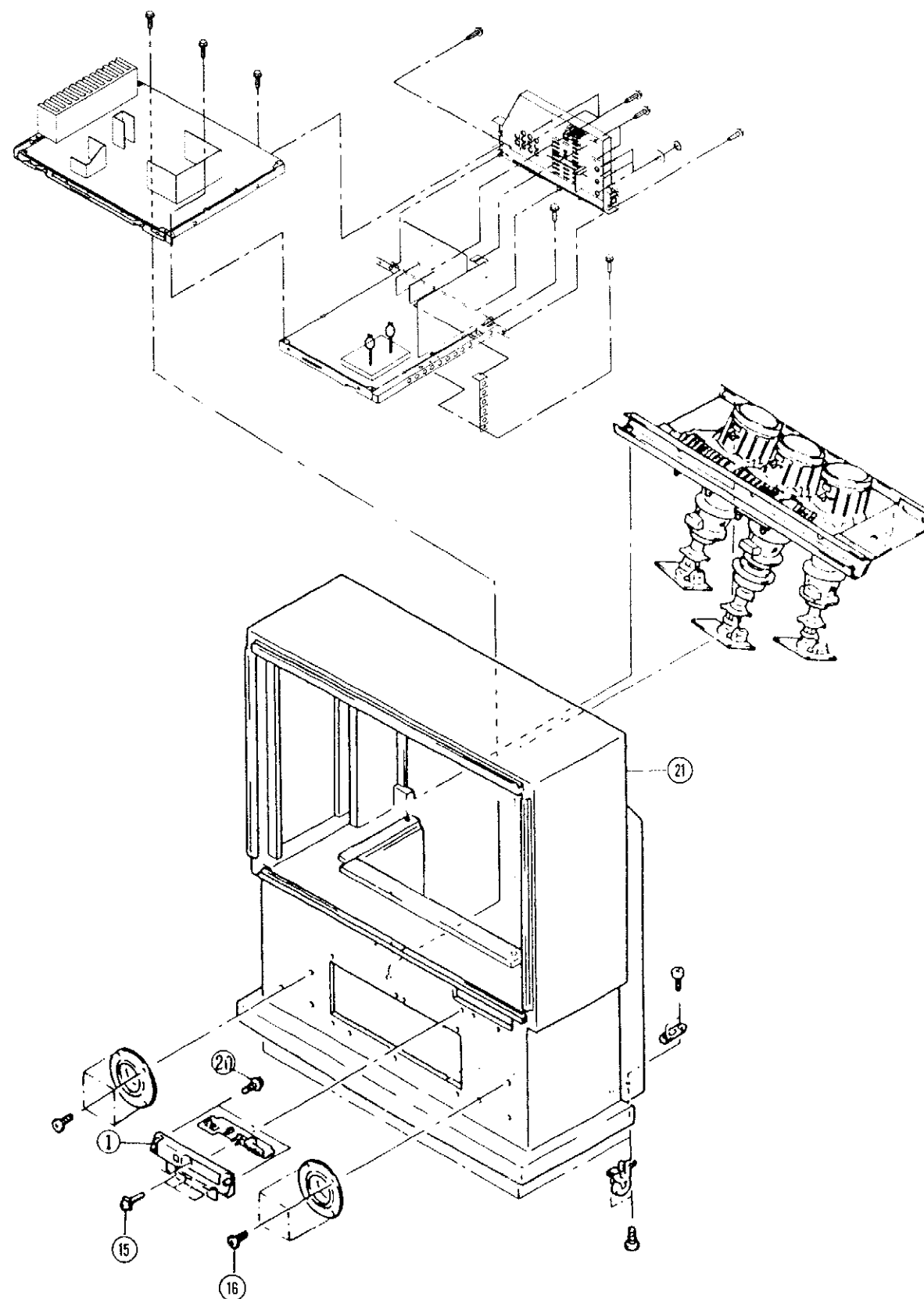


EXPLODED VIEW (1/3)

50FX18B
50FX19K
55FX20B


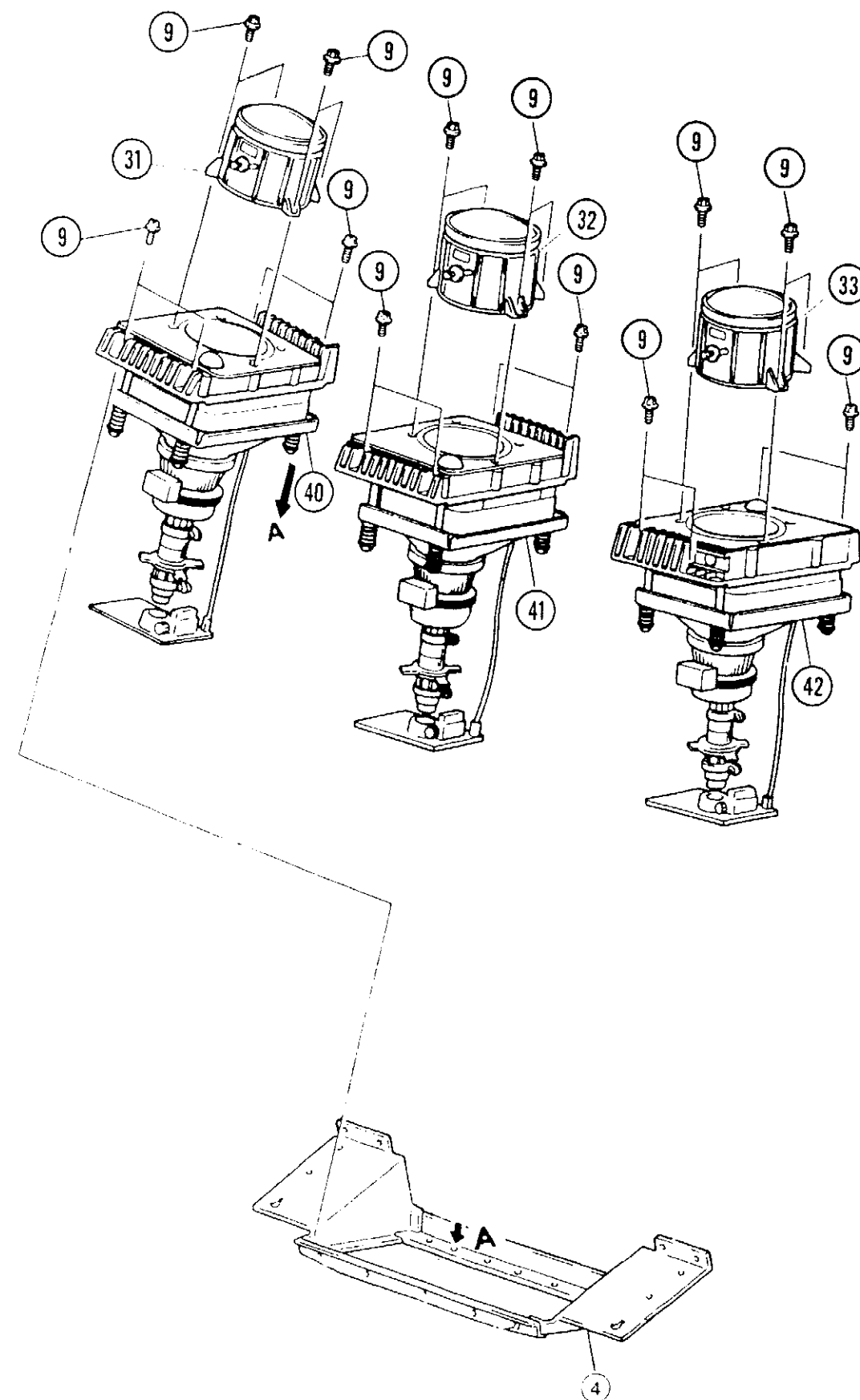
Note: Some parts may appear different than those shown in the exploded view. When ordering, refer to the REPLACEMENT PARTS LIST for correct part number. Since this Service Manual covers several models, use care to select the correct part for the model being serviced.

EXPLODED VIEW (2/3)



Note: Some parts may appear different than those shown in the exploded view. When ordering, refer to the REPLACEMENT PARTS LIST for correct part number. Since this Service Manual covers several models, use care to select the correct part for the model being serviced.

EXPLODED VIEW (3/3)



Note: Some parts may appear different than those shown in the exploded view. When ordering, refer to the REPLACEMENT PARTS LIST for correct part number. Since this Service Manual covers several models, use care to select the correct part for the model being serviced.

REPLACEMENT PARTS LIST

PRODUCT SAFETY NOTE: Components marked with a Δ have special characters important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

ABBREVIATIONS					
Capacitors: CD: Ceramic Disc PF: Polyester Film EL: Electrolytic PP: Polypropylene PR: Paper TA: Tantalum TM: Trimmer		Resistors: CF: Carbon Film CC: Carbon Composition MF: Metal Oxide Film VR: Variable Resistor WW: Wire Wound FR: Fuse Resistor MG: Metal Glaze		Semiconductors: TR: Transistor DI: Diode ZD: Zener Diode VA: Varistor TH: Thermistor IC: Integrated Circuit	

CIRCUIT BLOCK	SECOND CHARACTER OF SYMBOL NO.	CIRCUIT BLOCK	SECOND CHARACTER OF SYMBOL NO.	CIRCUIT BLOCK	SECOND CHARACTER OF SYMBOL NO.
System Control	0	Signal Control	Y	CPT	8
Tuner	1	(include composite)		Horizontal Deflection	7
Signal (Y) & SYNC.	3	Signal Control	C	Vertical Deflection	6
Signal (Chroma)	5	(include BPF)		Dynamic Focus	F
3 Line Comb	X	Signal Control	A	Convergence	K
Sound	4	(include MTS)		Sensor Distribution	L
Surround	S	PIP	P	Power Supply	9
MTS	W	VM	E	Graphic Eq.	G
SP Terminal	Z	CONTROL	M		

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
CAPACITORS					
CA01	0800003R	EL 1.0UF-M 50V	CE02	0284621R	EL 0.47UF 50V (BP)
CA02	0800003R	EL 1.0UF-M 50V	CE03	0800041R	EL 47UF-M 16V
CA05	0800003R	EL 1.0UF-M 50V	CE04	0890081R	CD 330PF 50V
CA06	0800003R	EL 1.0UF-M 50V	CE05	0800049R	EL 100UF-M .6V
CA07	0800003R	EL 1.0UF-M 50V	CE06	0880044R	PF 0.01UF-KEB 50V
CA08	0800003R	EL 1.0UF-M 50V	CE07	0800049R	EL 100UF-M .6V
CA26	0800015R	EL 10UF-M 16V	CE08	0276717R	PF 0.1UF-J 50V (TF TYP E)
CA27	0800015R	EL 10UF-M 16V	CE09	0276717R	PF 0.1UF-J 50V (TF TYP E)
CA28	0800015R	EL 10UF-M 16V	CE10	0800042R	EL 47UF-M 25V
CA29	0800015R	EL 10UF-M 16V	CE11	0890074R	CD 100PF-J 50V
CA31	0800015R	EL 10UF-M 16V	CE12	0244541F	CD 0.01MF-K B 500V
CA33	0800015R	EL 10UF-M 16V	CE13	0244541F	CD 0.01MF-K B 500V
CA34	0800015R	EL 10UF-M 16V	CE14	AL00009R	EL 47UF 160V
CA35	0800015R	EL 10UF-M 16V	CE15	0247848R	CD 56PF-J SL 500V
CA36	0800015R	EL 10UF-M 16V	CE16	AL00007R	EL 220UF16
CA37	0800015R	EL 10UF-M 16V	CE17	0244509R	CD 4700PF-KB B 500V
CA38	0800041R	EL 47UF-M 16V	CE18	0890074R	CD 100PF-J 50V
CA39	0800041R	EL 47UF-M 16V	CE19	AL00009R	EL 47UF 160V
CA40	0800015R	EL 10UF-M 16V	CE20	AL00009R	EL 47UF 160V
CA41	0800015R	EL 10UF-M 16V	CE21	0890077R	CD 180PF-K 50V
CA50	0284634R	EL 4.7UF-M 50V	CF01	0800317R	EL 47UF-M(SMG) 16V
CA51	0800009R	EL 4.7UF-M 25V	CF02	0800353R	EL 470UF-M 16V
CA52	0284634R	EL 4.7UF-M 50V	CF03	0284638R	EL10UF-SME(BP) 16V
CA53	0800015R	EL 10UF-M 16V	CF04	0800291R	EL10UF-M(SMG) 16V
CA54	0800015R	EL 10UF-M 16V	CF05	0276721R	PF 0.22UF-J 50V (TF TY PE)
CA55	0284634R	EL 4.7UF-M 50V	CF06	0800291R	EL10UF-M(SMG) 16V
CA56	0800015R	EL 10UF-M 16V	CF07	0880041R	PF 0.0056UF-KEB50V
CA57	0284634R	EL 4.7UF-M 50V	CF08	0244120R	CD 820PF-K B 50V
CA68	0800015R	EL 10UF-M 16V	CF09	0284642R	EL10UF-SME(BP)50V
CA69	0800009R	EL 4.7UF-M 25V	CF10	0890083R	CD 470PF-K 50V
CA73	0800015R	EL 10UF-M 16V	CF11	0800291R	EL10UF-M(SMG) 16V
CA74	0800009R	EL 4.7UF-M 25V	CF12	AN00062R	PF 103UF 50V
CA75	0800003R	EL 1.0UF-M 50V	CF13	0890082R	CD 390PF-K 50V
CA76	0800003R	EL 1.0UF-M 50V	CF14	0800353R	EL 470UF-M 16V
CA80	0800015R	EL 10UF-M 16V	CF15	0284638R	EL10UF-SME(BP) 16V
CA81	0800015R	EL 10UF-M 16V	CF16	0800291R	EL10UF-M(SMG) 16V
CC02	0244171R	CD 0.01UF-Z F 50V TAPE	CF17	0244109R	CD 4700PF-KB 50V
CE01	0800075F	EL 470UF-M 25V	CK01	0800326R	EL 100UF-M 16V
			CK02	0244141R	CD 0.01UF-KB B 50V
			CK03	0800326R	EL 100UF-M 16V

REPLACEMENT PARTS LIST

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
CK04	0244141R	CD 0.01UF-KB B 50V	CX12	0244171R	CD 0.01UF-Z F 50V TAPE
CK05	AN00075R	PF 104UF 50V	CX13	0246443R	CD 13PF (C) 50WV
CK06	0800326R	EL 100UF-M 16V	CX14	0880044R	PF 0.01UF-KEB 50V
CK07	0800326R	EL 100UF-M 16V	CX15	0284621R	EL 0.47UF 50V (BP)
CK08	AN00075R	PF 104UF 50V	CX16	0890089R	CD 1500PF-K 50V
CK10	0800353R	EL 470UF-M 16V	CX17	0890082R	CD 390PF-K 50V
CK11	0800058R	EL 220UF-M 16V	CX18	0890074R	CD 100PF-J 50V
CK13	AN00075R	PF 104UF 50V	CX19	0890087R	CD 1000PF-K 50V
CK14	AN00075R	PF 104UF 50V	CX20	0800009R	EL 4.7UF-M 25V
CK15	0248688R	CD 150PF-J SL 50V	CX21	0890109R	CD T6R0D50D3
CK17	0248688R	CD 150PF-J SL 50V	CX22	0244171R	CD 0.01UF-Z F 50V TAPE
CK19	0248688R	CD 150PF-J SL 50V	CX23	0800048R	EL 100UF-M 10V
CK21	0248688R	CD 150PF-J SL 50V	CX24	0244171R	CD 0.01UF-Z F 50V TAPE
CK23	0248688R	CD 150PF-J SL 50V	CX25	0244171R	CD 0.01UF-Z F 50V TAPE
CK25	0248688R	CD 150PF-J SL 50V	CX26	0244171R	CD 0.01UF-Z F 50V TAPE
CK27	0258175G	EL 470UF 50V	CX27	0806009R	EL 4.7UF-M 25V
CK28	0258175G	EL 470UF 50V	CX28	0244171R	CD 0.01UF-Z F 50V TAPE
CK29	0248688R	CD 150PF-J SL 50V	CX29	0880053R	PF 0.047UF-KEB 50V
CK30	0248688R	CD 150PF-J SL 50V	CX30	0244171R	CD 0.01UF-Z F 50V TAPE
CK31	0248688R	CD 150PF-J SL 50V	CX31	0248690R	CD 180PF-J SL 50V
CK32	0248688R	CD 150PF-J SL 50V	CX32	0880044R	PF 0.01UF-KEB 50V
CK33	0248688R	CD 150PF-J SL 50V	CX33	0244171R	CD 0.01UF-Z F 50V TAPE
CK34	0248688R	CD 150PF-J SL 50V	CX34	0800048R	EL 100UF-M 10V
CK35	0800041R	EL 47UF-M 16V	CX35	0880044R	PF 0.01UF-KEB 50V
CK36	0800041R	EL 47UF-M 16V	CX36	0800048R	EL 100UF-M 10V
CK37	AN00062R	PF 103UF 50V	CX37	0244171R	CD 0.01UF-Z F 50V TAPE
CK38	AN00062R	PF 103UF 50V	CX38	0244171R	CD 0.01UF-Z F 50V TAPE
CK39	AN00062R	PF 103UF 50V	CX39	0244171R	CD 0.01UF-Z F 50V TAPE
CK40	AN00062R	PF 103UF 50V	CX40	0244171R	CD 0.01UF-Z F 50V TAPE
CK41	0248688R	CD 150PF-J SL 50V	CX41	0244171R	CD 0.01UF-Z F 50V TAPE
CK42	0880031R	PF 1000PF-K 50V	CX42	0800057R	EL 220UF-M 10V
CK44	0244118R	CD 470PF-K 50V	CX45	0800015R	EL 10UF-M 16V
CK45	0880042R	PF 0.0068UF-KEB50V	CX46	0800049R	EL 100UF-M 16V
CK46	0880044R	PF 0.01UF-KEB 50V	CX47	0800049R	EL 100UF-M 16V
CK47	0880044R	PF 0.01UF-KEB 50V	CX48	0880044R	PF 0.01UF-KEB 50V
CK51	0800321R	EL 47UF-M 50V	CX49	0800049R	EL 100UF-M 16V
CK52	0800321R	EL 47UF-M 50V	CX50	0800048R	EL 100UF-M 10V
CK53	0800321R	EL 47UF-M 50V	CX52	0800048R	EL 100UF-M 10V
CK54	0800321R	EL 47UF-M 50V	CX53	0880044R	PF 0.01UF-KEB 50V
CK55	0800321R	EL 47UF-M 50V	CX54	0284647R	EL 22UF-SME(BP) 16V
CK56	0800321R	EL 47UF-M 50V	CY01	0284647R	EL 22UF-SME(BP) 16V
CM01	0800023R	EL 22UF-M 16V	CY04	0800023R	EL 22UF-M 16V
CM02	0244171R	CD 0.01UF-Z F 50V TAPE	CY05	0800023R	EL 22UF-M 16V
CM03	0800003R	EL 1.0UF-M 50V	CY06	0800023R	EL 22UF-M 16V
CM04	0244171R	CD 0.01UF-Z F 50V TAPE	CY07	0800023R	EL 22UF-M 16V
CM05	0244171R	CD 0.01UF-Z F 50V TAPE	CY08	0800049R	EL 100UF-M 16V
CM06	0880057R	PF 0.1UF-KEB 50V	CY09	0276717R	PF 0.1UF-J 50V (TF TYP E)
CN01	0800279R	EL 1.0UF-M(SMG) 50V	CY10	0284638R	EL 10UF-SME(BP) 16V
CN02	0800288R	EL 4.7UF-M(SMG) 50V	CY14	0800074N	EL 470UF-M 16V
CN03	0880051R	PF 0.033UF-KEB 50V	CY17	0800041R	EL 47UF-M 16V
CN04	0890084R	CD 560PF-K 50V	CY50	0800049R	EL 100UF-M 16V
CN05	0800041R	EL 47UF-M 16V	CY51	0284634R	EL 4.7UF-M 50V
CN06	0800018R	EL 10UF-M 50V	CY52	0880011R	EL 0.015UF
CX01	0800041R	EL 47UF-M 16V	CY53	0800015R	EL 10UF-M 16V
CX02	0890065R	CD 22PF-J 50V	CY54	0880013R	EL 0.033UF
CX03	0890061R	CD 10PF- 50V	CY55	0880006R	EL 0.033UF
CX04	0890064R	CD 18PF-J SL 50V	CY56	0880006R	EL 0.033UF
CX05	0800049R	EL 100UF-M 16V	CY57	0880016R	PF FILM 0.1UF 50V
CX06	0800009R	EL 4.7UF-M 25V	CY75	0800023R	EL 22UF-M 16V
CX07	0880031R	PF 1000PF-K 50V	CZ01	0800015R	EL 10UF-M 16V
CX08	0890071R	CD 56PF-J 50V	CZ02	0800015R	EL 10UF-M 16V
CX09	0880044R	PF 0.01UF-KEB 50V	CZ03	0800049R	EL 100UF-M 16V
CX10	0800005R	EL 2.2UF-M 50V	CZ04	0800049R	EL 100UF-M 16V
CX11	0800009R	EL 4.7UF-M 25V	CZ05	0276717R	PF 0.1UF-J 50V (TF TYPE)

50FX18B
50FX19K
55FX20B

REPLACEMENT PARTS LIST

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
CZ06	0880051R	PF 0.033UF-KEB 50V	C106	0800079N	EL 102M6R3WHLT-SME
CZ07	0880041R	PF 0.0056UF-KEB 50V	C107	0880057R	PF 0.1UF-KEB 50V
CZ08	0880041R	PF 0.0056UF-KEB 50V	C108	0800082N	EL 1000UF-MB16V(SME)
CZ09	0880051R	PF 0.033UF-KEB 50V	C109	0800082N	EL 1000UF-MB16V(SME)
CZ10	0890087R	CD 1000PF-K 50V	C110	0800015R	EL 10UF-M 16V
CZ11	0800015R	EL 10UF-M 16V	C111	0800049R	EL 100UF-M 16V
CZ12	0890087R	CD 1000PF-K 50V	C3A2	0880057R	PF 0.1UF-KEB 50V
CZ13	0800015R	EL 10UF-M 16V	C304	0800015R	EL 10UF-M 16V
CZ14	0800353R	EL 470UF-M 16V	C305	0800007R	EL 3.3UF-M 50V
C002	0890078R	CD 220PF-K 50V	C306	0244171R	CD 0.01UF-Z F 50V TAPE
C003	0246464R	CD 100PF-J CH 50V TAPE	C307	0244171R	CD 0.01UF-Z F 50V TAPE
C004	0800023R	EL 22UF-M 16V	C308	0244171R	CD 0.01UF-Z F 50V TAPE
C005	0890087R	CD 1000PF-K 50V	C309	0800015R	EL 10UF-M 16V
C006	0284623R	EL 1UF-SME(BP) 50V	C311	0880033R	PF 0.0015UF-KEB50V
C007	0284623R	EL 1UF-SME(BP) 50V	C312	0880046R	PF 0.015UF-K 50V
C008	0284623R	EL 1UF-SME(BP) 50V	C313	0800003R	EL 1.0UF-M 50V
C009	0284623R	EL 1UF-SME(BP) 50V	C314	0800003R	EL 1.0UF-M 50V
C010	0284623R	EL 1UF-SME(BP) 50V	C315	0800049R	EL 100UF-M 16V
C011	0800003R	EL 1.0UF-M 50V	C316	0244171R	CD 0.01UF-Z F 50V TAPE
C012	0800003R	EL 1.0UF-M 50V	C317	0800058R	EL 220UF-M 16V
C013	0284623R	EL 1UF-SME(BP) 50V	C318	0800003R	EL 1.0UF-M 50V
C014	0800003R	EL 1.0UF-M 50V	C319	0244171R	CD 0.01UF-Z F 50V TAPE
C015	0800015R	EL 10UF-M 16V	C320	0244171R	CD 0.01UF-Z F 50V TAPE
C016	0890121R	CD 33PF-J CH 50V	C321	0244171R	CD 0.01UF-Z F 50V TAPE
C017	0890121R	CD 33PF-J CH 50V	C322	0244171R	CD 0.01UF-Z F 50V TAPE
C018	0800015R	EL 10UF-M 16V	C323	0800003R	EL 1.0UF-M 50V
C019	0800005R	EL 2.2UF-M 50V	C324	0284623R	EL 1UF-SME(BP) 50V
C022	0800015R	EL 10UF-M 16V	C325	0800005R	EL 2.2UF-M 50V
C023	0800047R	EL 100UF-M 6.3V	C326	0284623R	EL 1UF-SME(BP) 50V
C024	0880057R	PF 0.1UF-KEB 50V	C327	0800003R	EL 1.0UF-M 50V
C025	0880044R	PF 0.01UF-KEB 50V	C328	0880037R	PF 0.0033UF-KEB50V
C026	0880057R	PF 0.1UF-KEB 50V	C329	0890079R	CD 270PF-K 50V
C028	0800012R	EL 4.7UF-M 50V	C401	0800015R	EL 10UF-M 16V
C029	0890074R	CD 100PF-J 50V	C402	0284623R	EL 1UF-SME(BP) 50V
C031	0800003R	EL 1.0UF-M 50V	C403	0284623R	EL 1UF-SME(BP) 50V
C032	0800047R	EL 100UF-M 6.3V	C404	0800003R	EL 1.0UF-M 50V
C033	0880057R	PF 0.1UF-KEB 50V	C405	0800003R	EL 1.0UF-M 50V
C034	0890085R	CD 680PF-K 50V	C406	0890087R	CD 1000PF-K 50V
C035	0800015R	EL 10UF-M 16V	C407	0890087R	CD 1000PF-K 50V
C036	0800047R	EL 100UF-M 6.3V	C408	0800042R	EL 47UF-M 25V
C037	0880057R	PF 0.1UF-KEB 50V	C409	0800042R	EL 47UF-M 25V
C038	0800048R	EL 100UF-M 10V	C410	0800051R	EL 100UF-M 25V
C039	0800015R	EL 10UF-M 16V	C411	0800003R	EL 1.0UF-M 50V
C040	0800074N	EL 470UF-M 16V	C412	0800003R	EL 1.0UF-M 50V
C041	0880057R	PF 0.1UF-KEB 50V	C413	0800051R	EL 100UF-M 25V
C042	0800003R	EL 1.0UF-M 50V	C414	0800041R	EL 47UF-M 16V
C043	0800047R	EL 100UF-M 6.3V	C415	0880057R	PF 0.1UF-KEB 50V
C044	0880057R	PF 0.1UF-KEB 50V	C416	0253934F	EL 2200UF-M 35V
C045	0880057R	PF 0.1UF-KEB 50V	C417	0880057R	PF 0.1UF-KEB 50V
C046	0880048R	PF 0.022UF-KEB 50V	C418	0880057R	PF 0.1UF-KEB 50V
C052	0880044R	PF 0.01UF-KEB 50V	C419	0253934F	EL 2200UF-M 35V
C053	0880057R	PF 0.1UF-KEB 50V	C420	0253934F	EL 2200UF-M 35V
C054	0800049R	EL 100UF-M 16V	C421	0880062R	PF 0.22UF-KEB 50V
C056	0800005R	EL 2.2UF-M 50V	C424	0880057R	PF 0.1UF-KEB 50V
C057	0800003R	EL 1.0UF-M 50V	C426	0880044R	PF 0.01UF-KEB 50V
C058	0880057R	PF 0.1UF-KEB 50V	C427	0880044R	PF 0.01UF-KEB 50V
C059	0800049R	EL 100UF-M 16V	C428	0880057R	PF 0.1UF-KEB 50V
C061	0880057R	PF 0.1UF-KEB 50V	C429	0800015R	EL 10UF-M 16V
C070	0800015R	EL 10UF-M 16V	C5A8	0800075F	EL 470UF-M 25V
C101	0800049R	EL 100UF-M 16V	C5A9	0880057R	PF 0.1UF-KEB 50V
C102	0800049R	EL 100UF-M 16V	C5C1	0880057R	PF 0.1UF-KEB 50V
C103	0880057R	PF 0.1UF-KEB 50V	C5C2	0800049R	EL 100UF-M 16V
C104	0800079N	EL 102M6R3WHLT-SME	C5C3	0880057R	PF 0.1UF-KEB 50V
C105	0800082N	EL 1000UF-MB16V(SME)	C5C4	0800075F	EL 470UF-M 25V

50FX18B
50FX19K
55FX20B

REPLACEMENT PARTS LIST

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
C5C5	0880057R	PF 0.1UF-KEB 50V	C724	0890087R	CD 1000PF-K 50V
C5C6	0880057R	PF 0.1UF-KEB 50V	C725	0800279R	EL 1.0UF-M(SMG) 50V
C5C7	0800075F	EL 470UF-M 25V	C726	0244109R	CD 4700PF-KB 50V
C5C8	0880057R	PF 0.1UF-KEB 50V	C727	0880048R	PF 0.022UF-KEB 50V
C5E3	0890071R	CD 56PF-J 50V	C728	0890089R	CD 1500PF-K 50V
C5E5	0880044R	PF 0.01UF-KEB 50V	C729	0800282R	EL 2.2UF-M(SMG) 50V
C5E6	0880044R	PF 0.01UF-KEB 50V	C730	0284634R	EL 4.7UF-M 50V
C5E7	0800049R	EL 100UF-M 16V	C731	0244501R	CD 1000PF-K 500V
C501	0244171R	CD 0.01UF-Z F 50V TAPE	C732	0243508R	CD 390PF-K 500V
C502	0800058R	EL 220UF-M 16V	C735	0243511R	CD 680PF-K 500V TAPE
C503	0800001R	EL 0.47UF-M 50V (SME)	C738	0243503R	CD 150PF-K B 500V
C504	0244171R	CD 0.01UF-Z F 50V TAPE	C739	0243511R	CD 680PF-K 500V TAPE
C505	0890116R	CD 15PF-J CH 50V	C740	0890084R	CD 560PF-K 50V
C506	0880044R	PF 0.01UF-KEB 50V	Δ C741	0246348	CD 220PF-2KV
C507	0244171R	CD 0.01UF-Z F 50V TAPE	C804	0244889	CD 2200PF +-10% 2KV
C508	0244171R	CD 0.01UF-Z F 50V TAPE	C805	0800326	EL 100MF 16V
C509	0244171R	CD 0.01UF-Z F 50V TAPE	C807	0244139	CD 1000PF +-10% 50V
C510	0244171R	CD 0.01UF-Z F 50V TAPE	C808	0244139	CD 1000PF +-10% 50V
C511	0244171R	CD 0.01UF-Z F 50V TAPE	C810	0800326	EL 100MF 16V
C512	0800015R	EL 10UF-M 16V	C831	0257543	EL 3.3MF 315V
C513	0244171R	CD 0.01UF-Z F 50V TAPE	C834	0244889	CD 2200PF +-10% 2KV
C516	0800041R	EL 47UF-M 16V	C835	0800326	EL 100MF 16V
C517	0800048R	EL 100UF-M 10V	C837	0244139	CD 1000PF +-10% 50V
C518	0800015R	EL 10UF-M 16V	C838	0244139	CD 1000PF +-10% 50V
C530	0800049R	EL 100UF-M 16V	C864	0244889	CD 2200PF +-10% 2KV
C531	0276717R	PF 0.1UF-J 50V (TF TYP E)	C865	0800326	EL 100MF 16V
C532	0800049R	EL 100UF-M 16V	C867	0244139	CD 1000PF +-10% 50V
C533	0880016R	PF FILM 0.1UF 50V	C868	0890086	CD 820PF +-10% 50V
C534	0800009R	EL 4.7UF-M 25V	Δ C901	AN00148S	PF 0.22UF250V
C603	0800345R	EL 330UF-M(SMG 25V)	Δ C902	AN00144S	PF 0.1UF250V
C604	AN00062R	PF 103UF 50V	C904	0248593F	CD 4700PF-Z 250V
C606	0298261R	TA 1MF-J 35V	C906	0248593F	CD 4700PF-Z 250V
C607	0284446R	EL 1UF-M 50V	C907	0259167	EL 820UF (HR) 200V
C608	0800368F	EL 2200UF-M 25V	C908	0259167	EL 820UF (HR) 200V
C609	0800347N	EL 330UF-M(SMG) 50V	C911	0890087R	CD 1000PF-K 50V
C610	0800326R	EL 100UF-M 16V	C912	0800059R	EL 220UF-M 25V
C611	0800347N	EL 330UF-M(SMG) 50V	C913	0299981F	PF 0.01UF-J 630V
C612	0880051R	PF 0.033UF-KEB 50V	C914	0880044R	PF 0.01UF-KEB 50V
C613	AN00062R	PF 103UF 50V	C915	0880037R	PF 0.0033UF-KEB50V
C614	0279859F	PF 0.1UF-K 100V	C916	0880031R	PF 1000PF-K 50V
C617	0284446R	EL 1UF-M 50V	C917	0800286R	EL 4.7UF-M(SMG) 25V
C618	0284449R	EL 4.7UF-KMF 50V	C918	0880057R	PF 0.1UF-KEB 50V
C619	AN00062R	PFD 103UF 50V	C920	0285221	EL 1000UF-M 35V
C620	0800291R	EL 10UF-M(SMG) 16V	C921	0285221	EL 1000UF-M 35V
C622	0800041R	EL 47UF-M 16V	C922	0285221	EL 1000UF-M 35V
C623	0800041R	EL 47UF-M 16V	C924	0285224	EL 2200UF-M 25V
C624	0244109R	CD 4700PF-KB 50V	C925	0285224	EL 2200UF-M 25V
C701	AN00062R	PF 103UF 50V	C926	0258697	EL 470UF (HR) 160V
C702	0243507R	CD 330PF-K 500V TAPE	C927	0880044R	PF 0.01UF-KEB 50V
C703	0244501R	CD 1000PF-K 500V	C928	0244105R	CD 2200PF-K 50V TAPE
C704	0259153F	EL 220UF (HR) 160V	C930	0284436R	EL 100UF-M 35V
C705	0299926F	PF 0.1UF-K 200V	C931	0284436R	EL 100UF-M 35V
C706	0890028M	CD 330PF-K B 50V	C933	0800326R	EL 100UF-M 16V
Δ C708	0262414F	PP 3300PF 1800V	C935	0284436R	EL 100UF-M 35V
Δ C709	0262426F	PP 0.0091UF 1.8KV	C936	0284405R	EL 220UF-M 16V
C710	0299931F	PP 0.27UF-K 200V	C937	0284405R	EL 220UF-M 16V
C711	0299931F	PP 0.27UF-K 200V	C939	0284436R	EL 100UF-M 35V
Δ C715	0299720F	PP 0.015UF-J 6	C942	0800326R	EL 100UF-M 16V
C717	0259471	PP 6.8UF-M (BP) 50V	C943	0800279R	EL 1.0UF-M(SMG) 50V
C718	0299636F	PF 0.068UF-J 1600V	C944	0800317R	EL 47UF-M(SMG) 16V
C720	0243503R	CD 150PF-K B 500V	C945	0284647R	EL 22UF-SME(BP) 16V
C721	0253983F	EL 33UF-M 350V	C947	0258121R	EL 2.2UF-M 100V
C722	0800329R	EL 100UF-M(SMG) 50V	C954	0800363F	EL SMG1000UF-M 35V
C723	0880057R	PF 0.1UF-KEB 50V	C955	0800317R	EL 47UF-M(SMG) 16V

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
C956	0800082F	EL 1000UF-M 16V	DM02	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
C957	0800331R	EL 100UF-M 63V	DM03	CH00231	LED SLH-56VC3F
C958	0800331R	EL 100UF-M 63V	DM04	2348212M	DI MTZ-J15BTA
C960	0880057R	PF 0.1UF-KEB 50V	DN01	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
C967	0880198R	PF 0.22UF-J 50V	DN02	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
C968	0880198R	PF 0.22UF-J 50V	DN03	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
C969	0880198R	PF 0.22UF-J 50V	DN04	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
C972	0800291R	EL10UF-M(SMG) 16V	DN05	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
C973	0800083F	EL1000UF-M 25V	DN06	2348071M	ZD MTZJ-3.9A TA
C974	0800326	EL100UF-M 16V	DN07	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
		DIODES	DN08	CH00151M	DI DSM1SD2(200V)TAPE
DA01	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	DN09	2331849M	ZD HZ12C3 (TA) SI 500MW
DA02	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	DN10	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DA03	2348031M	DI MTZ-J2.7ATA	DX01	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DA04	2348031M	DI MTZ-J2.7ATA	DY50	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DA05	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	DZ01	CH00151M	DI DSM1SD2 (200V)
DA06	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D005	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DA07	2348031M	DI MTZ-J2.7ATA	D012	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DA08	2348031M	DI MTZ-J2.7ATA	D013	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DA11	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D014	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DA12	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D015	2331827M	ZD HZ-9 TAPE (C1) SI 500MW
DE01	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D022	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DE02	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D023	2348103M	ZD MTZJ-5.1C TA
DE03	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D024	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DE04	CH00151M	DI DSM1SD2(200V)TAPE	D025	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DE05	CH00151M	DI DSM1SD2(200V)TAPE	D026	2348212M	DI MTZ-J15BTA
DE06	CH00151M	DI DSM1SD2(200V)TAPE	D027	2348212M	DI MTZ-J15BTA
DE07	CH00151M	DI DSM1SD2(200V)TAPE	D028	2348212M	DI MTZ-J15BTA
DF01	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D029	2348212M	DI MTZ-J15BTA
DF02	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D030	2348212M	DI MTZ-J15BTA
DF03	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D031	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DF04	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D033	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DF05	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D034	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DF06	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D040	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK03	2339551M	DI ED14(V1) SI 5MA 45	D041	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK04	CH00172M	DI DFM1SD2(200V)TAPE	D042	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK05	CH00172M	DI DFM1SD2(200V)TAPE	D043	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK06	2334324M	ZD RD36E TAPE (B3) SI 500MW	D044	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK07	2334324M	ZD RD36E TAPE (B3) SI 500MW	D101	2348212M	DI MTZ-J15BTA
DK08	2334324M	ZD RD36E TAPE (B3) SI 500MW	D103	2335991M	ZD HZ-T33 (02 TP)
DK09	2334324M	ZD RD36E TAPE (B3) SI 500MW	D104	2348123M	ZD MTZJ-6.2C TA
DK10	2334324M	ZD RD36E TAPE (B3) SI 500MW	D105	2335991M	ZD HZ-T33 (02 TP)
DK11	2334324M	ZD RD36E TAPE (B3) SI 500MW	D106	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK12	2334324M	ZD RD36E TAPE (B3) SI 500MW	D107	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK13	2334324M	ZD RD36E TAPE (B3) SI 500MW	D3A1	2334324M	ZD RD36E TAPE (B3) SI 500MW
DK14	2334324M	ZD RD36E TAPE (B3) SI 500MW	D301	2339867M	ZD HZS-9-C1 TAPE (SI.200MA)
DK15	2334324M	ZD RD36E TAPE (B3) SI 500MW	D302	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK16	2334324M	ZD RD36E TAPE (B3) SI 500MW	D303	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK17	2334324M	ZD RD36E TAPE (B3) SI 500MW	D304	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK18	2331797M	ZD HZ-5 (C1)	D305	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK19	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D306	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK23	2331154M	ZD HZ-12 (A1-3 B1-3.TA) SI 200MA	D307	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK24	2331154M	ZD HZ-12 (A1-3 B1-3.TA) SI 200MA	D308	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK25	2331154M	ZD HZ-12 (A1-3 B1-3.TA) SI 200MA	D309	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK26	2331154M	ZD HZ-12 (A1-3 B1-3.TA) SI 200MA	D310	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK27	2331154M	ZD HZ-12 (A1-3 B1-3.TA) SI 200MA	D311	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK28	2331154M	ZD HZ-12 (A1-3 B1-3.TA) SI 200MA	D313	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK32	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D314	2348103M	ZD MTZJ-5.1C TA
DK39	2339551M	DI ED14(V1) SI 5MA 45	D401	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK40	2331154M	ZD HZ-12 (A1-3 B1-3.TA) SI 200MA	D402	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DK50	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D404	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
DM01	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D405	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
			D406	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
			D407	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
D5A3	CH00151M	DI DSM1SD2(200V)TAPE	D909	CH00151M	DI DSM1SD2(200V)TAPE
D5A5	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D912	2348202M	ZD MTZJ-13B TA
D5A6	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D913	2359401	DI FMP-G12S
D502	2331827M	ZD HZ-9 TAPE (C1) SI 500MW	D914	2359401	DI FMP-G12S
D503	2331827M	ZD HZ-9 TAPE (C1) SI 500MW	D915	2359401	DI FMP-G12S
D504	2331827M	ZD HZ-9 TAPE (C1) SI 500MW	D916	2349861	DI FMU-G16S
D505	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D917	2359401	DI FMP-G12S
D506	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D918	2359401	DI FMP-G12S
D507	2348103M	ZD MTZJ-5.1C TA	D920	CH00151M	DI DSM1SD2(200V)TAPE
D508	2331827M	ZD HZ-9 TAPE (C1) SI 500MW	D921	2339222M	ZD HZS27-2L
D509	2348103M	ZD MTZJ-5.1C TA	D922	2348283M	ZD MTZJ-30C TA
D601	2334243M	ZD RD16E (B2 T2/TP/TA) SI 10MA 1	D923	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D602	2331154M	ZD HZ-12 (A1-3 B1-3.TA) SI 200MA	D924	2348141M	ZD MTZJ-7.5A TA
D603	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D925	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D604	2331807M	ZD HZ-6 TAPE (C1) SI 500MW	D926	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D605	CH00151M	DI DSM1SD2(200V)TAPE	D927	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D606	CH00151M	DI DSM1SD2(200V)TAPE	D928	2348213M	ZD MTZJ-15C TA
D607	CH00151M	DI DSM1SD2(200V)TAPE	D930	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D608	CH00031M	DI AU02V1(280V)	D931	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D609	2334305M	ZD RD30E (B4 T2/TP/TA) SI 5MA 30	Δ D932	2348283M	ZD MTZJ-30C TA
D610	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D933	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D611	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	Δ D934	2339042M	ZD HZS7A2L TAPE
D612	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D935	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D614	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D936	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D615	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D937	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D616	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D938	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D620	CH00151M	DI DSM1SD2(200V)TAPE	D939	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D622	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D940	2348304M	ZD MTZJ-36D TA
D701	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D941	CH00172M	DI DFM1SD2(200V)TAPE
Δ D702	2348511	DI RS3FS	D942	CH00172M	DI DFM1SD2(200V)TAPE
Δ D703	2359371	DI S3L60 SI	D943	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
Δ D704	2359371	DI S3L60 SI	D944	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D705	CH00041M	DI ES1FV1 (1500V)	D945	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D706	CH00041M	DI ES1FV1 (1500V)	D946	CH00151M	DI DSM1SD2(200V)TAPE
Δ D708	CH00031M	DI AU02V1(280V)	D947	CH00151M	DI DSM1SD2(200V)TAPE
Δ D709	CH00031M	DI AU02V1(280V)	D948	CH00151M	DI DSM1SD2(200V)TAPE
Δ D710	2335042M	ZD HZ-22 (2L TP) SI 200MA	D949	CH00151M	DI DSM1SD2(200V)TAPE
D711	2339612M	ZD HZS-3 TA (BLL) SI 200MA	D950	CH00182R	DI (SLZ-381C-06-T1)
D712	CH00151M	DI DSM1SD2(200V)TAPE	D951	CH00182R	DI (SLZ-381C-06-T1)
D713	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D952	CH00182R	DI (SLZ-381C-06-T1)
D714	CH00172M	DI DFM1SD2(200V)TAPE	D953	CH00182R	DI (SLZ-381C-06-T1)
D715	2348203M	ZD MTZJ-13C TA	D954	CH00182R	SLZ-381C-06-T1)
D716	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D955	2331785M	ZD HZ-4 TAPE (B2) SI 500MW
D717	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D956	2348313M	ZD MTZJ-39C TA
D718	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D957	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D719	CH00172M	DI DFM1SD2(200V)TAPE	D958	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D801	2331827	ZD HZ-9 (C1)	D959	CH00172M	DI DFM1SD2(200V)TAPE
D802	23383211	DI 1SS270	D968	2348213M	ZD MTZJ-15C TA
D805	23383211	DI 1SS270	D970	2348193M	ZD MTZJ-12C TA
D831	2331827	ZD HZ-9 (C1)	D971	2348213M	ZD MTZJ-15C TA
D832	23383211	DI 1SS270	D972	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D833	23383211	DI 1SS270	D973	2331785M	ZD HZ-4 TAPE (B2) SI 500MW
D834	2331827	ZD HZ-9 (C1)	D974	2334304M	ZD RD30E (B3 T2/TP/TA) SI 5MA 3
D861	2331827	ZD HZ-9 (C1)	D975	CH00183R	DI (SLZ-981C-06-T1)
D862	23383211	DI 1SS270	D976	2348141M	ZD MTZJ-7.5A TA
D863	23383211	DI 1SS270	D977	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D864	2331827	ZD HZ-9 (C1)	D978	2348264M	ZD MTZJ-24D TA
Δ D901	2342061	DI D3SB(A)60.	D979	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D902	CH00172M	DI DFM1SD2(200V)TAPE	D980	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D903	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC	D981	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC
D904	2398611M	DI 1SS254 TAPE (35V) SI 4NSEC			
D905	CH00172M	DI DFM1SD2(200V)TAPE			
D906	2334304M	ZD RD30E (B3 T2/TP/TA) SI 5MA 3			
D907	2331827M	ZD HZ-9 TAPE (C1)SI 500MW			

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
FUSES					
Δ F902	2722358	FUSE AC 5A	LE03	2123468M	FERRITE BEADS CORE LEAD 0.8MH
Δ F903	FN00071R	FUSE DC 5A UL	LE04	2123468M	FERRITE BEADS CORE LEAD 0.8MH
Δ F905	2722389M	FUSE DC 4A	LK01	2123462M	FERRITE BEADS CORE B 2.3UH
Δ F906	2722353	FUSE AC 1.6A	LK02	2123462M	FERRITE BEADS CORE B 2.3UH
COMPOUND COMPONENTS					
Δ EFPK	AZ00003	CRX FOCUS PACK	LK03	BH00214R	FILTER COIL 100UH
HM01	2574762	R/C MODULE SPS-409-1K	LK04	2122929M	COIL-AXIAL 1.0UH-M
H001	2791754R	CONDENSER WITH 3 TERMINAL 100PF	LK05	2122929M	COIL-AXIAL 1.0UH-M
H002	2791754R	CONDENSER WITH 3 TERMINAL 100PF	LK06	2122929M	COIL-AXIAL 1.0UH-M
H003	2791754R	CONDENSER WITH 3 TERMINAL 100PF	LK07	2122929M	COIL-AXIAL 1.0UH-M
H004	2791754R	CONDENSER WITH 3 TERMINAL 100PF	LK08	2122929M	COIL-AXIAL 1.0UH-M
H005	2791754R	CONDENSER WITH 3 TERMINAL 100PF	LK09	2122929M	COIL-AXIAL 1.0UH-M
H006	2791754R	CONDENSER WITH 3 TERMINAL 100PF	LK10	2122929M	COIL-AXIAL 1.0UH-M
Δ H901	2793312	CP-EXN-471P365L	LK11	2122929M	COIL-AXIAL 1.0UH-M
H902	2793312	CP-EXN-471P365L	LX01	2123105M	LAL02 AXIAL COIL 15UH-K
UKDG	CS00021	DIGI-CON.HC2061 ASY	LX02	2123116M	COIL-AXIAL 100UH-K
U002	HP00091	PINP UNIT KC-010S	LX03	2123109M	COIL-AXIAL 33UH-K
U101	HC00221	BTF-WB451	LX04	2123763R	RADIAL COIL 101K(TYPE EL0405)
U102	2429691	FE TUNER V8-A68FT	LX05	2123763R	RADIAL COIL 101K(TYPE EL0405)
IC'S					
IA02	2366301	IC UPD4052BC	LX06	2123763R	RADIAL COIL 101K(TYPE EL0405)
IA03	CP02601	AN5285K	LX07	2123763R	RADIAL COIL 101K(TYPE EL0405)
IK02	2003421	IC UPC7805AHF	LX08	2123763R	RADIAL COIL 101K(TYPE EL0405)
IK04	2003191	IC STK4274	LX09	2123763R	RADIAL COIL 101K(TYPE EL0405)
IK05	2003191	IC STK4274	LX10	2123763R	RADIAL COIL 101K(TYPE EL0405)
IK06	2003191	IC STK4274	LX11	2123109M	COIL-AXIAL 33UH-K
IK07	2380391	IC UPD6326C	LY01	2123781R	FILTER COIL 101K
IK08	CP01631R	ICL-PST9142	LY04	2123763R	RADIAL COIL 101K(TYPE EL0405)
IX01	CP01081U	DIGITAL MONOLITHIC IC (TC9089AN)	LY50	2123116M	COIL-AXIAL 100UH-K
IX02	CP00121U	ANALOG MONOLITHIC IC (MM1093N)	LZ01	2123781R	FILTER COIL 101K
IY01	2020452	ANALOG MONOLITHIC IC (CXA1545AS)	L002	2123781R	FILTER COIL 101K
IZ01	2020001	IC TDA9860	L003	2123781R	FILTER COIL 101K
I001	CP02794	MN1876476-HHW	L004	2146093	COIL (LC FILTER) FL-160V5R8SS
I002	CP00822	DIGITAL MONOLITHIC IC M6M80042P	L101	2123763R	RADIAL COIL 101K(TYPE EL0405)
I003	2366301	IC UPD4052BC	L102	2123763R	RADIAL COIL 101K(TYPE EL0405)
I004	CP00822	DIGITAL MONOLITHIC IC M6M80042P	L103	2123781R	FILTER COIL 101K
I006	CP00761	ANALOG MONOLITHIC IC (MM1231XD)	L104	2123763R	RADIAL COIL 101K(TYPE EL0405)
I007	2000541	IC M51951BSL	L105	2123781R	FILTER COIL 101K
I401	2004751	IC TA8200AH	L106	2123781R	FILTER COIL 101K
ISA2	2003421	IC UPC7805AHF	L107	2123781R	FILTER COIL 101K
ISA3	2003421	IC UPC7805AHF	L303	2123763R	RADIAL COIL 101K(TYPE EL0405)
ISA4	2004665	IC PQ09RF21	L401	2122652M	FERRITE CORE
IS01	2020324	ANALOG MONOLITHIC IC (YAT016H)	L5A6	2122952M	COIL-AXIAL 47UH-KM BELTING
IS02	CP02781	M62399P	L5A7	2123763R	RADIAL COIL 101K(TYPE EL0405)
I601	2003541	IC LA7838	L504	2123763R	RADIAL COIL 101K(TYPE EL0405)
Δ I901	2373343	IC M6511	L601	2123461M	FERRITE BEADS B 0.8 MH
Δ I902	2000465	IC PS2501-1 (KC/LC)	L701	BH00212R	FILTER COIL 68UH
Δ I903	2000465	IC PS2501-1 (KC/LC)	L702	2123461M	FERRITE BEADS B 0.8 MH
Δ I904	2381343	IC (SE115N)	L703	2123465M	FERRITE BEADS 0.4UH
I906	CP03163	ANALOG MONOLITHIC UPC7912AHF	L704	2123461M	FERRITE BEADS B 0.8 MH
I907	2003424	IC UPC7812AHF	L705	BZ00846	CHOKE COIL 1000UH SL1720
COILS					
LA02	2123763R	RADIAL COIL 101K(TYPE EL0405)	L706	BH00228R	COIL 332K-1T7608A
LA03	2123763R	RADIAL COIL 101K(TYPE EL0405)	L707	BH00206R	FILTER COIL 27UH
LE01	2123103M	COIL-AXIAL LAL 10UH-K	L708	BH00214R	FILTER COIL 100UH
LE02	2123468M	FERRITE BEADS CORE LEAD 0.8MH	L709	BH00202R	FILTER COIL 12UH
			L710	BZ00318	LINEARITY COIL 50UH-W
			L711	BZ00317	LINEARITY COIL 140UH-W
			L803	2123763	RADIAL COIL 100MH
			Δ L901	BZ00571	LINE FILTER 1.0MH
			Δ L902	BZ00561	LINE FILTER 3.9MH
			Δ L903	BZ00571	LINE FILTER 1.0MH
			L904	2122653M	FERRITE CORE 1.65UH TAPE
			L907	BH00201R	FILTER COIL 10UH
			L908	BH00201R	FILTER COIL 10UH
			L909	BH00201R	FILTER COIL 10UH
			L912	BH00201R	FILTER COIL 10UH

50FX18B
50FX19K
55FX20B

REPLACEMENT PARTS LIST

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
L913	BH00201R	FILTER COIL 10UH	QX01	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
L916	BH00214R	FILTER COIL 100UH	QX02	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
L917	BH00214R	FILTER COIL 100UH	QX04	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
L918	BH00214R	FILTER COIL 100UH	QX05	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
L923	BH00212R	FILTER COIL 68UH	QX06	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
L924	BH00214R	FILTER COIL 100UH	QX07	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
L925	BH00214R	FILTER COIL 100UH	QX08	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
L926	2161152	FILTER COIL	QX09	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
TRANSISTORS					
QA01	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	QX10	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QA02	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ	QX11	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
QA03	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	QX12	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QA04	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ	QY01	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QA05	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	QY07	2326021M	TRS. 2SC1741S P/R/Q (TP) 250MHZ 30
QA06	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	QY08	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QA07	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	QY50	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
QA09	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	QY51	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QA11	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	QY52	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
QA12	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	QY53	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QA72	2326876R	TRS. DTC124ES TAPE	QY54	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QA73	2326876R	TRS. DTC124ES TAPE	Q001	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QA74	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	Q002	2327772M	TRS. 2SC3413 TAPE (B/C) SI 200MHZ
QA75	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	Q003	2320647M	TRS. 2SC1213 (C 21 TZ/D 21 TZ) SI 80MHZ4
QA78	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ	Q004	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QA79	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ	Q005	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QC01	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	Q006	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
QE01	2320598M	TRS. 2SC458 (B TZ/C TZ/D TZ)	Q007	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QE02	2320598M	TRS. 2SC458 (B TZ/C TZ/D TZ)	Q008	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QE03	2320598M	TRS. 2SC458 (B TZ/C TZ/D TZ)	Q009	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QE04	2320598M	TRS. 2SC458 (B TZ/C TZ/D TZ)	Q010	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QE05	2320598M	TRS. 2SC458 (B TZ/C TZ/D TZ)	Q011	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QE06	2320647M	TRS. 2SC1213 (C 21 TZ/D 21 TZ) SI 80MHZ4	Q012	2320647M	TRS. 2SC1213 (C 21 TZ/D 21 TZ) SI 80MHZ4
QE07	2321351M	TRS. 2SA836/844D/E 100MA 200MW 200MHZSI	Q013	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QE08	2315381	TRS. 2SA1837	Q014	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
QE09	2315391	TRS. 2SC4793	Q015	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QE10	2320598M	TRS. 2SC458 (B TZ/C TZ/D TZ)	Q016	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
Δ QF01	2314991	TRS. 2SC4630	Q017	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QF02	2320663M	TRS. 2SC1213A (C)	Q018	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QF03	2320663M	TRS. 2SC1213A (C)	Q019	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QF04	2320663M	TRS. 2SC1213A (C)	Q021	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QF05	2320663M	TRS. 2SC1213A (C)	Q022	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
QF06	2320663M	TRS. 2SC1213A (C)	Q023	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ
QF07	2320663M	TRS. 2SC1213A (C)	Q024	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QF08	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	Q101	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QF09	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	Q102	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QF10	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	Q103	2320647M	TRS. 2SC1213 (C 21 TZ/D 21 TZ) SI 80MHZ4
QF11	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	Q105	2323524M	TRS. 2SD789 TAPE(C)
QK01	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	Q3A2	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QK02	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	Q3A3	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QK03	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	Q302	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QK04	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	Q303	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QK08	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ	Q304	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QK09	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ	Q305	2326021M	TRS. 2SC1741S P/R/Q (TP) 250MHZ 30
QK10	2312172	TRS. 2SD2375 Q/P	Q310	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QM01	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	Q311	2326876R	TRS. DTC124ES TAPE
QM02	2312992	PHOTO TRS. RPT-38PT3F (M)	Q312	2326876R	TRS. DTC124ES TAPE
QN01	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	Q313	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QN02	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	Q401	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QN03	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ	Q402	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QN04	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	Q403	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QN05	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	Q404	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ
QN06	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ	Q5A3	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ

REPLACEMENT PARTS LIST

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
Q502	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	RA22	0700034M	CF 1/16W 330-JB
Q503	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	RA23	0700032M	CF 1/16W 220-JB
Q506	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	RA24	0700062M	CF 1/16W 39K-JB
Q601	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	RA25	0700054M	CF 1/16W 10K-JB
Q604	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ	RA26	0700041M	CF 1/16W 1.0K-JB
Q605	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ	RA27	0700041M	CF 1/16W 1.0K-JB
Q606	2312177	TRS. 2SD2375 (LD) (P)	RA28	0700034M	CF 1/16W 330-JB
Q607	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ	RA29	0700032M	CF 1/16W 220-JB
Q608	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	RA30	0700041M	CF 1/16W 1.0K-JB
Q609	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ	RA31	0700067M	CF 1/16W 100K-JB
Q610	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ	RA32	0700041M	CF 1/16W 1.0K-JB
Q612	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	RA33	0700067M	CF 1/16W 100K-JB
Q613	2320665R	TRS. 2SC1213A(D R) TA	RA38	0700034M	CF 1/16W 330-JB
Q701	2326216	TRS. 2SC3116 (S/T)	RA39	0700032M	CF 1/16W 220-JB
Q704	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	RA44	0700034M	CF 1/16W 330-JB
Q705	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ	RA45	0700032M	CF 1/16W 220-JB
Q706	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	RA46	0700041M	CF 1/16W 1.0K-JB
Q707	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ	RA47	0700067M	CF 1/16W 100K-JB
Δ Q777	2315274F	TRS. 2SC458B-05 (1500V)	RA48	0700041M	CF 1/16W 1.0K-JB
Q801	2312372F	TRS. 2SC3942	RA49	0700067M	CF 1/16W 100K-JB
Q802	2320663	TRS. 2SC1213AC SI 80MHZ 400MW	RA50	0700041M	CF 1/16W 1.0K-JB
Q803	2320637	TRS. 2SA673C/D SI 80MHZ 400MW	RA51	0700067M	CF 1/16W 100K-JB
Q804	2320591	TRS. 2SC458B/C SI 230MHZ 200MW	RA52	0700041M	CF 1/16W 1.0K-JB
Q831	2312372F	TRS. 2SC3942	RA53	0700067M	CF 1/16W 100K-JB
Q832	2320663	TRS. 2SC1213AC SI 80MHZ 400MW	RA54	0700041M	CF 1/16W 1.0K-JB
Q833	2320637	TRS. 2SA673C/D SI 80MHZ 400MW	RA55	0700067M	CF 1/16W 100K-JB
Q835	2320591	TRS. 2SC458B/C SI 230MHZ 200MW	RA56	0700041M	CF 1/16W 1.0K-JB
Q861	2312372F	TRS. 2SC3942	RA57	0700067M	CF 1/16W 100K-JB
Q862	2320663	TRS. 2SC1213AC SI 80MHZ 400MW	RA58	0700041M	CF 1/16W 1.0K-JB
Q863	2320637	TRS. 2SA673C/D SI 80MHZ 400MW	RA59	0700067M	CF 1/16W 100K-JB
Q865	2320591	TRS. 2SC458B/C SI 230MHZ 200MW	RA60	0700041M	CF 1/16W 1.0K-JB
Q901	2320665R	TRS. 2SC1213A(D R) TA	RA61	0700067M	CF 1/16W 100K-JB
Q902	2312171	TRS. 2SC3852	RA64	0100123M	CF 1/8W 270K-JB
Δ Q903	2323782R	THYRISTOR 03P2M(TA)	RA65	0100123M	CF 1/8W 270K-JB
Δ Q909	2321112M	TRS. 2SA778AK(02 TAPE)	RA66	0100123M	CF 1/8W 270K-JB
Q912	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	RA67	0100123M	CF 1/8W 270K-JB
Q913	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ	RA68	0179561M	MG 2.2M-J TAPE
Q914	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ	RA69	0700049M	CF 1/16W 4.7K-JB
Q915	2312177	TRS. 2SD2375 (LD) (P)	RA70	0700056M	CF 1/16W 15K-JB
RESISTORS			RA83	0700041M	CF 1/16W 1.0K-JB
RAC9	0700062M	CF 1/16W 39K-JB	RA84	0700067M	CF 1/16W 100K-JB
RAD1	0700041M	CF 1/16W 1.0K-JB	RA85	0700054M	CF 1/16W 10K-JB
RAD2	0700054M	CF 1/16W 10K-JB	RA86	0700041M	CF 1/16W 1.0K-JB
RAD3	0700041M	CF 1/16W 1.0K-JB	RA89	0700054M	CF 1/16W 10K-JB
RAD4	0700062M	CF 1/16W 39K-JB	RA90	0700054M	CF 1/16W 10K-JB
RAD5	0700041M	CF 1/16W 1.0K-JB	RA91	0700041M	CF 1/16W 1.0K-JB
RAD6	0700054M	CF 1/16W 10K-JB	RA92	0700067M	CF 1/16W 100K-JB
RAD7	0700041M	CF 1/16W 1.0K-JB	RA93	0700054M	CF 1/16W 10K-JB
RA01	0700051M	CF 1/16W 5.6K-JB	RA94	0700041M	CF 1/16W 1.0K-JB
RA02	0700051M	CF 1/16W 5.6K-JB	RC02	0700027M	CF 1/16W 100-JB
RA05	0700051M	CF 1/16W 5.6K-JB	RC04	0700027M	CF 1/16W 100-JB
RA06	0700051M	CF 1/16W 5.6K-JB	RC05	0700032M	CF 1/16W 220-JB
RA07	0700051M	CF 1/16W 5.6K-JB	RC06	0700041M	CF 1/16W 1.0K-JB
RA08	0700051M	CF 1/16W 5.6K-JB	RC16	0100038M	CF 1/8W 75-JB
RA09	0700041M	CF 1/16W 1.0K-JB	RE01	0110135S	MF 390-JS
RA10	0700041M	CF 1/16W 1.0K-JB	RE02	0700067M	CF 1/16W 100K-JB
RA11	0700027M	CF 1/16W 100-JB	RE03	0700059M	CF 1/16W 27K-JB
RA12	0700027M	CF 1/16W 100-JB	RE04	0700035M	CF 1/16W 390-JB
RA18	0700062M	CF 1/16W 39K-JB	RE05	0700042M	CF 1/16W 1.2K-JB
RA19	0700054M	CF 1/16W 10K-JB	RE06	0700036M	CF 1/16W 470-JB
RA20	0700041M	CF 1/16W 1.0K-JB	RE07	0700067M	CF 1/16W 100K-JB
RA21	0700041M	CF 1/16W 1.0K-JB	RE08	0700059M	CF 1/16W 27K-JB
			RE09	0700042M	CF 1/16W 1.2K-JB
			RE10	0700033M	CF 1/16W 270-JB

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
RE11	0700033M	CF 1/16W 270-JB	RF35	0700056M	CF 1/16W 15K-JB
RE12	0700045M	CF 1/16W 2.2K-JB	RF36	0700053M	CF 1/16W 8.2K-JB
RE13	0700058M	CF 1/16W 22K-JB	RF37	0700041M	CF 1/16W 1.0K-JB
RE14	0700067M	CF 1/16W 100K-JB	RF38	0700061M	CF 1/16W 33K-JB
RE15	0700046M	CF 1/16W 2.7K-JB	RF39	0700049M	CF 1/16W 4.7K-JB
RE16	0113742M	CF 1/2W 470-JB	RF40	0700054M	CF 1/16W 10K-JB
RE17	0700061M	CF 1/16W 33K-JB	RF41	0700054M	CF 1/16W 10K-JB
RE18	0700036M	CF 1/16W 470-JB	RKA4	0700052M	CF 1/16W 6.8K-JB
RE19	0700067M	CF 1/16W 100K-JB	RKA5	0700044M	CF 1/16W 1.8K-JB
RE20	0700054M	CF 1/16W 10K-JB	RKA6	0700041M	CF 1/16W 1.0K-JB
RE21	0100065M	CF 1/8W 1K-JB	RKA7	0700041M	CF 1/16W 1.0K-JB
RE22	0700025M	CF 1/16W 68-J	RK01	0700063M	CF 1/16W 47K-JB
RE23	0113701M	CF SRD 1/2P-B 10-J	RK02	0700049M	CF 1/16W 4.7K-JB
RE24	0100039M	CF 1/8W 82-JB	RK03	0100125M	CF 1/8W 330K-JB
RE25	0114165M	CF SRD 1/4 PF 1.5K-J	RK05	0700054M	CF 1/16W 10K-JB
RE26	0114143M	CF 1/4W 330-JB	RK06	0700054M	CF 1/16W 10K-JB
RE27	0114221M	CF 1/4 PB 68K-J	RK07	0700027M	CF 1/16W 100-JB
RE28	0114221M	CF 1/4 PB 68K-J	RK08	0700027M	CF 1/16W 100-JB
RE29	0113776M	CF SRD 1/2P-B 12K-J	RK09	0700027M	CF 1/16W 100-JB
RE30	0100039M	CF 1/8W 82-JB	RK10	0700041M	CF 1/16W 1.0K-JB
RE31	0100069M	CF 1/8W 1.5K-JB	RK11	0700041M	CF 1/16W 1.0K-JB
RE32	0100053M	CF 1/8W 330-JB	RK12	0700041M	CF 1/16W 1.0K-JB
RE33	0113716M	CF SRD 1/2P-B 43-J	RK13	0700063M	CF 1/16W 47K-JB
RE34	0110229S	MF 220-JS	RK14	0110229S	MF 220-JS
RE35	0113686M	CF 1/2W 2.7-J	RK15	0113694M	CF 1/2W 5.6-J
RE36	0113686M	CF 1/2W 2.7-J	RK16	0113694M	CF 1/2W 5.6-J
RE37	0113716M	CF SRD 1/2P-B 43-J	RK17	0100077M	CF 1/8W 3.3K-JB
RE38	0110132S	MF 300-JS	RK18	0700063M	CF 1/16W 47K-JB
RE39	0700054M	CF 1/16W 10K-JB	RK19	0110225S	MG 150-JS 2W
RE40	0700049M	CF 1/16W 4.7K-JB	RK20	0113692M	CF 1/2W 4.7-J
RF01	0110279S	MF 27K-JS	RK21	0113692M	CF 1/2W 4.7-J
RF02	0110279S	MF 27K-JS	RK22	0100077M	CF 1/8W 3.3K-JB
RF03	0110279S	MF 27K-JS	RK23	0700063M	CF 1/16W 47K-JB
RF04	0110279S	MF 27K-JS	RK24	0110229S	MF 220-JS
RF05	0110279S	MF 27K-JS	RK25	0113698M	CF 1/2W 8.2-J
RF06	0114213M	CF SRD 1/4 PB 33K-J	RK26	0113698M	CF 1/2W 8.2-J
RF07	0100065M	CF 1/8W 1K-JB	RK27	0100077M	CF 1/8W 3.3K-JB
RF08	0100041M	CF 1/8W 100-JB	RK28	0700063M	CF 1/16W 47K-JB
RF09	0700035M	CF 1/16W 390-JB	RK29	0110225S	MG 150-JS 2W
RF10	0700045M	CF 1/16W 2.2K-JB	RK30	0113696M	CF 1/2W 6.8-J
RF11	0700059M	CF 1/16W 27K-JB	RK31	0113696M	CF 1/2W 6.8-J
RF12	0700059M	CF 1/16W 27K-JB	RK32	0100077M	CF 1/8W 3.3K-JB
RF13	0700048M	CF 1/16W 3.9K-JB	RK33	0700063M	CF 1/16W 47K-JB
RF14	0700041M	CF 1/16W 1.0K-JB	RK34	0110229S	MF 220-JS
RF15	0700046M	CF 1/16W 2.7K-JB	RK35	0113696M	CF 1/2W 6.8-J
RF16	0700049M	CF 1/16W 4.7K-JB	RK36	0113696M	CF 1/2W 6.8-J
RF17	0700027M	CF 1/16W 100-JB	RK37	0100077M	CF 1/8W 3.3K-JB
RF18	0700054M	CF 1/16W 10K-JB	RK38	0100077M	CF 1/8W 3.3K-JB
RF19	0700037M	CF 1/16W 560-JB	RK39	0700063M	CF 1/16W 47K-JB
RF20	0700066M	CF 1/16W 82K-JB	RK40	0110225S	MF 150-JS 2W
RF21	0700049M	CF 1/16W 4.7K-JB	RK41	0113692M	CF 1/2W 4.7-J
RF22	0700059M	CF 1/16W 27K-JB	RK42	0113692M	CF 1/2W 4.7-J
RF23	0700043M	CF 1/16W 1.5K-JB	RK53	0700044M	CF 1/16W 1.8K-JB
RF24	0700051M	CF 1/16W 5.6K-JB	RK54	0700041M	CF 1/16W 1.0K-JB
RF25	0700038M	CF 1/16W 680-JB	RK55	0700041M	CF 1/16W 1.0K-JB
RF26	0187098M	CF 1/16W 24K-JB	RK56	0700041M	CF 1/16W 1.0K-JB
RF27	0700054M	CF 1/16W 10K-JB	RK57	0700041M	CF 1/16W 1.0K-JB
RF28	0100113M	CF 1/8W 100K-JB	RK58	0700041M	CF 1/16W 1.0K-JB
RF29	0700063M	CF 1/16W 47K-JB	RK59	0700046M	CF 1/16W 2.7K-JB
RF30	0700046M	CF 1/16W 2.7K-JB	RK60	0700052M	CF 1/16W 6.8K-JB
RF31	0700041M	CF 1/16W 1.0K-JB	RK61	0700046M	CF 1/16W 2.7K-JB
RF32	0700052M	CF 1/16W 6.8K-JB	RK62	0700052M	CF 1/16W 6.8K-JB
RF33	0700058M	CF 1/16W 22K-JB	RK63	0700046M	CF 1/16W 2.7K-JB
RF34	0700058M	CF 1/16W 22K-JB	RK64	0700052M	CF 1/16W 6.8K-JB

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
RK65	0700046M	CF 1/16W 2.7K-JB	RX03	0700027M	CF 1/16W 100-JB
RK66	0700052M	CF 1/16W 6.8K-JB	RX04	0700039M	CF 1/16W 820-JB
RK67	0700036M	CF 1/16W 470-JB	RX05	0700036M	CF 1/16W 470-JB
RK68	0700055M	CF 1/16W 12K-JB	RX06	0700043M	CF 1/16W 1.5K-JB
RK69	0700058M	CF 1/16W 22K-JB	RX07	0700027M	CF 1/16W 100-JB
RK70	0700036M	CF 1/16W 470-JB	RX08	0700039M	CF 1/16W 820-JB
RK71	0700055M	CF 1/16W 12K-JB	RX12	0700043M	CF 1/16W 1.5K-JB
RK72	0700058M	CF 1/16W 22K-JB	RX13	0700039M	CF 1/16W 820-JB
RK73	0700036M	CF 1/16W 470-JB	RX14	0700063M	CF 1/16W 47K-JB
RK74	0700055M	CF 1/16W 12K-JB	RX15	0700036M	CF 1/16W 470-JB
RK75	0700058M	CF 1/16W 22K-JB	RX16	0700033M	CF 1/16W 270-JB
RK76	0700036M	CF 1/16W 470-JB	RX17	0100125M	CF 1/8W 330K-JB
RK77	0700055M	CF 1/16W 12K-JB	RX18	0700056M	CF 1/16W 15K-JB
RK78	0700058M	CF 1/16W 22K-JB	RX19	0700041M	CF 1/16W 1.0K-JB
RK79	0700046M	CF 1/16W 2.7K-JB	RX20	0187054M	CF 1/16W 360-JB
RK80	0700046M	CF 1/16W 2.7K-JB	RX21	0700051M	CF 1/16W 5.6K-JB
RK81	0700046M	CF 1/16W 2.7K-JB	RX22	0700041M	CF 1/16W 1.0K-JB
RK82	0700046M	CF 1/16W 2.7K-JB	RX23	0700035M	CF 1/16W 390-JB
RK83	0700046M	CF 1/16W 2.7K-JB	RX24	0700054M	CF 1/16W 10K-JB
RK84	0700046M	CF 1/16W 2.7K-JB	RX25	0700054M	CF 1/16W 10K-JB
RK85	0700048M	CF 1/16W 3.9K-JB	RX26	0100130M	CF 1/8W 510K-JB
RK86	0700047M	CF 1/16W 3.3K-JB	RX27	0700047M	CF 1/16W 3.3K-JB
RK89	0700046M	CF 1/16W 2.7K-JB	RX28	0700039M	CF 1/16W 820-JB
RK90	0700052M	CF 1/16W 6.8K-JB	RX29	0700027M	CF 1/16W 100-JB
RK91	0700054M	CF 1/16W 10K-JB	RX30	0700039M	CF 1/16W 820-JB
RK94	0100057M	CF 1/8W 470-JB	RX31	0700041M	CF 1/16W 1.0K-JB
RK95	0700046M	CF 1/16W 2.7K-JB	RX32	0700039M	CF 1/16W 820-JB
RK96	0700046M	CF 1/16W 2.7K-JB	RX33	0700041M	CF 1/16W 1.0K-JB
RK97	0700042M	CF 1/16W 1.2K-JB	RX34	0700057M	CF 1/16W 18K-JB
RM01	0700041M	CF 1/16W 1.0K-JB	RX35	0700064M	CF 1/16W 56K-JB
RM02	0700058M	CF 1/16W 22K-JB	RX36	0700036M	CF 1/16W 470-JB
RM03	0700045M	CF 1/16W 2.2K-JB	RX37	0700041M	CF 1/16W 1.0K-JB
RM04	0100065M	CF 1/8W 1K-JB	RX38	0700033M	CF 1/16W 270-JB
RM05	0100065M	CF 1/8W 1K-JB	RX39	0700054M	CF 1/16W 10K-JB
RM06	0700041M	CF 1/16W 1.0K-JB	RX40	0700027M	CF 1/16W 100-JB
RM07	0700043M	CF 1/16W 1.5K-JB	RX41	0700039M	CF 1/16W 820-JB
RM08	0700046M	CF 1/16W 2.7K-JB	RX42	0700041M	CF 1/16W 1.0K-JB
RM09	0700049M	CF 1/16W 4.7K-JB	RX43	0700044M	CF 1/16W 1.8K-JB
RM10	0100129M	CF 1/8W 470K-JB	RX44	0700041M	CF 1/16W 1.0K-JB
RM11	0700041M	CF 1/16W 1.0K-JB	RX45	0700062M	CF 1/16W 39K-JB
RM12	0100125M	CF 1/8W 330K-JB	RX46	0700054M	CF 1/16W 10K-JB
RM13	0114149M	CF SRD 1/4 PF 560-J	RX47	0700036M	CF 1/16W 470-JB
RM14	0100125M	CF 1/8W 330K-JB	RX48	0700034M	CF 1/16W 330-JB
RM15	0700054M	CF 1/16W 10K-JB	RX49	0700027M	CF 1/16W 100-JB
RN01	0700057M	CF 1/16W 18K-JB	RX50	0700039M	CF 1/16W 820-JB
RN02	0700041M	CF 1/16W 1.0K-JB	RX51	0700047M	CF 1/16W 3.3K-JB
RN03	0700041M	CF 1/16W 1.0K-JB	RX52	0700047M	CF 1/16W 3.3K-JB
RN04	0700067M	CF 1/16W 100K-JB	RX53	0187088M	CF 1/16W 9.1K-JB
RN05	0700052M	CF 1/16W 6.8K-JB	RX55	0700027M	CF 1/16W 100-JB
RN06	0700051M	CF 1/16W 5.6K-JB	RX57	0700054M	CF 1/16W 10K-JB
RN07	0700054M	CF 1/16W 10K-JB	RX58	0100115M	CF 1/8W 120K-JB
RN08	0700057M	CF 1/16W 18K-JB	RY01	0700027M	CF 1/16W 100-JB
RN09	0700061M	CF 1/16W 33K-JB	RY05	0700027M	CF 1/16W 100-JB
RN10	0700054M	CF 1/16W 10K-JB	RY06	0700027M	CF 1/16W 100-JB
RN11	0700058M	CF 1/16W 22K-JB	RY07	0700027M	CF 1/16W 100-JB
RN12	0700051M	CF 1/16W 5.6K-JB	RY08	0700041M	CF 1/16W 1.0K-JB
RN13	0700044M	CF 1/16W 1.8K-JB	RY09	0700041M	CF 1/16W 1.0K-JB
RN14	0700054M	CF 1/16W 10K-JB	RY10	0700041M	CF 1/16W 1.0K-JB
RN15	0700058M	CF 1/16W 22K-JB	RY11	0700041M	CF 1/16W 1.0K-JB
RN16	0700064M	CF 1/16W 56K-JB	RY12	0700027M	CF 1/16W 100-JB
RN18	0700057M	CF 1/16W 18K-JB	RY14	0700027M	CF 1/16W 100-JB
RN19	0700049M	CF 1/16W 4.7K-JB	RY15	0700027M	CF 1/16W 100-JB
RX01	0700059M	CF 1/16W 2.7K-JB	RY16	0700045M	CF 1/16W 2.2K-JB
RX02	0700067M	CF 1/16W 100K-JB	RY17	0700047M	CF 1/16W 3.3K-JB

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
RY18	0700054M	CF 1/16W 10K-JB	R0E5	0700041M	CF 1/16W 1.0K-JB
RY19	0700041M	CF 1/16W 1.0K-JB	R0E6	0700063M	CF 1/16W 47K-JB
RY31	0100038M	CF 1/8W 75-JB	R0E7	0700055M	CF 1/16W 12K-JB
RY32	0100038M	CF 1/8W 75-JB	R0E8	0700054M	CF 1/16W 10K-JB
RY33	0700063M	CF 1/16W 47K-JB	R0E9	0700041M	CF 1/16W 1.0K-JB
RY34	0700058M	CF 1/16W 22K-JB	R0F5	0700041M	CF 1/16W 1.0K-JB
RY35	0100038M	CF 1/8W 75-JB	R0F6	0700041M	CF 1/16W 1.0K-JB
RY39	0700034M	CF 1/16W 330-JB	R0F7	0700067M	CF 1/16W 100K-JB
RY40	0114137M	CF 1/4W 180-JB	R0F8	0700041M	CF 1/16W 1.0K-JB
RY41	0100037M	CF 1/8W 68-JB	R0F9	0700051M	CF 1/16W 5.6K-JB
RY42	0700067M	CF 1/16W 100K-JB	R0G1	0100123R	CF 1/8W 270K-J
RY43	0700041M	CF 1/16W 1.0K-JB	R0G2	0700041M	CF 1/16W 1.0K-JB
RY44	0700054M	CF 1/16W 10K-JB	R0G3	0700041M	CF 1/16W 1.0K-JB
RY45	0700039M	CF 1/16W 820-JB	R0G4	0700041M	CF 1/16W 1.0K-JB
RY47	0700054M	CF 1/16W 10K-JB	R0G5	0700027M	CF 1/16W 100-JB
RY48	0700027M	CF 1/16W 100-JB	R0G6	0700027M	CF 1/16W 100-JB
RY50	0700027M	CF 1/16W 100-JB	R0G7	0100065M	CF 1/8W 1K-JB
RY51	0700038M	CF 1/16W 680-JB	R0G8	0100089M	CF 1/8W 10K-JB
RY52	0700043M	CF 1/16W 1.5K-JB	R0G9	0100065M	CF 1/8W 1K-JB
RY53	0700039M	CF 1/16W 820-JB	R0H1	0100065M	CF 1/8W 1K-JB
RY54	0700063M	CF 1/16W 47K-JB	R0H2	0700049M	CF 1/16W 4.7K-JB
RY56	0700027M	CF 1/16W 100-JB	R0H3	0700058M	CF 1/16W 22K-JB
RY57	0100055M	CF 1/8W 390-JB	R0H4	0700067M	CF 1/16W 100K-JB
RY58	0700041M	CF 1/16W 1.0K-JB	R0H5	0700049M	CF 1/16W 4.7K-JB
RY59	0700046M	CF 1/16W 2.7K-JB	R0H6	0700031M	CF 1/16W 180-JB
RY60	0700043M	CF 1/16W 1.5K-JB	R0H7	0700066M	CF 1/16W 82K-JB
RY61	0100115M	CF 1/8W 120K-JB	R0H8	0100107M	CF 1/8W 56K-JB
RY62	0700052M	CF 1/16W 6.8K-JB	R0L1	0700041M	CF 1/16W 1.0K-JB
RY63	0700057M	CF 1/16W 18K-JB	R0L3	0700058M	CF 1/16W 22K-JB
RY64	0100121M	CF 1/8W 220K-JB	R0L4	0700058M	CF 1/16W 22K-JB
RY65	0700061M	CF 1/16W 33K-JB	R0L5	0700058M	CF 1/16W 22K-JB
RY66	0700029M	CF 1/16W 150-JB	R0L6	0700041M	CF 1/16W 1.0K-JB
RY67	0700039M	CF 1/16W 820-JB	R0L7	0700054M	CF 1/16W 10K-JB
RY68	0700034M	CF 1/16W 330-JB	R0L8	0700042M	CF 1/16W 1.2K-JB
RY77	0100123M	CF 1/8W 270K-JB	R0L9	0700054M	CF 1/16W 10K-JB
RY78	0100123M	CF 1/8W 270K-JB	R0M1	0700054M	CF 1/16W 10K-JB
RZ02	0700054M	CF 1/16W 10K-JB	R0M2	0700049M	CF 1/16W 4.7K-JB
RZ03	0700054M	CF 1/16W 10K-JB	R0M3	0700054M	CF 1/16W 10K-JB
RZ04	0700045M	CF 1/16W 2.2K-JB	R001	0700054M	CF 1/16W 10K-JB
RZ05	0700045M	CF 1/16W 2.2K-JB	R002	0700066M	CF 1/16W 82K-JB
RZ06	0700041M	CF 1/16W 1.0K-JB	R003	0700051M	CF 1/16W 5.6K-JB
RZ07	0700041M	CF 1/16W 1.0K-JB	R004	0700054M	CF 1/16W 10K-JB
RZ08	0700058M	CF 1/16W 22K-JB	R005	0700063M	CF 1/16W 47K-JB
RZ09	0147152	WW 3W 27-JA	R006	0700063M	CF 1/16W 47K-JB
RZ12	0700041M	CF 1/16W 1.0K-JB	R008	0700063M	CF 1/16W 47K-JB
R0A1	0700058M	CF 1/16W 22K-JB	R009	0700054M	CF 1/16W 10K-JB
R0A2	0700041M	CF 1/16W 1.0K-JB	R010	0700054M	CF 1/16W 10K-JB
R0A3	0700058M	CF 1/16W 22K-JB	R011	0700041M	CF 1/16W 1.0K-JB
R0A5	0700027M	CF 1/16W 100-JB	R012	0700064M	CF 1/16W 56K-JB
R0A6	0700037M	CF 1/16W 560-JB	R014	0700054M	CF 1/16W 10K-JB
R0A7	0700027M	CF 1/16W 100-JB	R015	0700055M	CF 1/16W 12K-JB
R0A8	0700041M	CF 1/16W 1.0K-JB	R016	0700051M	CF 1/16W 5.6K-JB
R0A9	0700041M	CF 1/16W 1.0K-JB	R017	0700041M	CF 1/16W 1.0K-JB
R0C1	0700041M	CF 1/16W 1.0K-JB	R018	0700032M	CF 1/16W 220-JB
R0C3	0700058M	CF 1/16W 22K-JB	R019	0100041M	CF 1/8W 100-JB
R0C4	0700027M	CF 1/16W 100-JB	R020	0700032M	CF 1/16W 220-JB
R0C5	0700027M	CF 1/16W 100-JB	R021	0700041M	CF 1/16W 1.0K-JB
R0C7	0700056M	CF 1/16W 15K-JB	R022	0700041M	CF 1/16W 1.0K-JB
R0C8	0700063M	CF 1/16W 47K-JB	R023	0700036M	CF 1/16W 470-JB
R0C9	0700054M	CF 1/16W 10K-JB	R024	0150110	VR RV6 500-B
R0E1	0100041M	CF 1/8W 100-JB	R025	0700036M	CF 1/16W 470-JB
R0E2	0700054M	CF 1/16W 10K-JB	R026	0150110	VR RV6 500-B
R0E3	0114149M	CF SRD 1/4 PF 560-J	R028	0700041M	CF 1/16W 1.0K-JB
R0E4	0700058M	CF 1/16W 22K-JB	R029	0150111	VR RV6 1K-B

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R031	0700032M	CF 1/16W 220-JB	R102	0700041M	CF 1/16W 1.0K-JB
R032	0700027M	CF 1/16W 100-JB	R103	0700038M	CF 1/16W 680-JB
R033	0700027M	CF 1/16W 100-JB	R104	0700041M	CF 1/16W 1.0K-JB
R034	0700054M	CF 1/16W 10K-JB	R105	0700041M	CF 1/16W 1.0K-JB
R035	0700058M	CF 1/16W 22K-JB	R106	0700038M	CF 1/16W 680-JB
R036	0700027M	CF 1/16W 100-JB	R107	0700054M	CF 1/16W 10K-JB
R037	0700058M	CF 1/16W 22K-JB	R108	0100065M	CF 1/8W 1K-JB
R038	0700027M	CF 1/16W 100-JB	R109	0700054M	CF 1/16W 10K-JB
R039	0700041M	CF 1/16W 1.0K-JB	R111	0700027M	CF 1/16W 100-JB
R040	0700041M	CF 1/16W 1.0K-JB	R112	0700054M	CF 1/16W 10K-JB
R041	0700041M	CF 1/16W 1.0K-JB	R113	0700051M	CF 1/16W 5.6K-JB
R042	0700051M	CF 1/16W 5.6K-JB	R114	0700041M	CF 1/16W 1.0K-JB
R043	0700027M	CF 1/16W 100-JB	R115	0700041M	CF 1/16W 1.0K-JB
R044	0700058M	CF 1/16W 22K-JB	R116	0700041M	CF 1/16W 1.0K-JB
R045	0700041M	CF 1/16W 1.0K-JB	R117	0700041M	CF 1/16W 1.0K-JB
R046	0700058M	CF 1/16W 22K-JB	R118	0100059M	CF 1/8W 560-JB
R047	0700041M	CF 1/16W 1.0K-JB	R119	0100059M	CF 1/8W 560-JB
R048	0700058M	CF 1/16W 22K-JB	R121	0700041M	CF 1/16W 1.0K-JB
R049	0700041M	CF 1/16W 1.0K-JB	R122	0700041M	CF 1/16W 1.0K-JB
R050	0700057M	CF 1/16W 18K-JB	R123	0700041M	CF 1/16W 1.0K-JB
R051	0700049M	CF 1/16W 4.7K-JB	R124	0700041M	CF 1/16W 1.0K-JB
R052	0700058M	CF 1/16W 22K-JB	R125	0700041M	CF 1/16W 1.0K-JB
R053	0700054M	CF 1/16W 10K-JB	R126	0700059M	CF 1/16W 27K-JB
R054	0700058M	CF 1/16W 22K-JB	R127	0700041M	CF 1/16W 1.0K-JB
R055	0700027M	CF 1/16W 100-JB	R128	0700041M	CF 1/16W 1.0K-JB
R056	0700027M	CF 1/16W 100-JB	R129	0700041M	CF 1/16W 1.0K-JB
R057	0700041M	CF 1/16W 1.0K-JB	R130	0700022M	CF 1/16W 39-J
R058	0700041M	CF 1/16W 1.0K-JB	R131	0700041M	CF 1/16W 1.0K-JB
R059	0700058M	CF 1/16W 22K-JB	R132	0700058M	CF 1/16W 22K-JB
R060	0700041M	CF 1/16W 1.0K-JB	R133	0700058M	CF 1/16W 22K-JB
R061	0700042M	CF 1/16W 1.2K-JB	R134	0700041M	CF 1/16W 1.0K-JB
R062	0700042M	CF 1/16W 1.2K-JB	R135	0700041M	CF 1/16W 1.0K-JB
R063	0700042M	CF 1/16W 1.2K-JB	R136	0700062M	CF 1/16W 39K-JB
R064	0700043M	CF 1/16W 1.5K-JB	R3A4	0700041M	CF 1/16W 1.0K-JB
R066	0700027M	CF 1/16W 100-JB	R3A5	0700041M	CF 1/16W 1.0K-JB
R067	0700051M	CF 1/16W 5.6K-JB	R3A6	0700032M	CF 1/16W 220-JB
R068	0700027M	CF 1/16W 100-JB	R3A7	0700032M	CF 1/16W 220-JB
R069	0700049M	CF 1/16W 4.7K-JB	R3A8	0700032M	CF 1/16W 220-JB
R070	0700051M	CF 1/16W 5.6K-JB	R3A9	0700041M	CF 1/16W 1.0K-JB
R072	0700052M	CF 1/16W 6.8K-JB	R3C1	0700041M	CF 1/16W 1.0K-JB
R073	0700027M	CF 1/16W 100-JB	R3C2	0700041M	CF 1/16W 1.0K-JB
R074	0700058M	CF 1/16W 22K-JB	R3C3	0700041M	CF 1/16W 1.0K-JB
R075	0700058M	CF 1/16W 22K-JB	R3C4	0700041M	CF 1/16W 1.0K-JB
R076	0700041M	CF 1/16W 1.0K-JB	R3C5	0700055M	CF 1/16W 12K-JB
R077	0700058M	CF 1/16W 22K-JB	R3C6	0700054M	CF 1/16W 10K-JB
R078	0700027M	CF 1/16W 100-JB	R3C7	0700063M	CF 1/16W 47K-JB
R079	0700058M	CF 1/16W 22K-JB	R3C8	0700063M	CF 1/16W 47K-JB
R080	0700027M	CF 1/16W 100-JB	R306	0700058M	CF 1/16W 22K-JB
R081	0700049M	CF 1/16W 4.7K-JB	R307	0700058M	CF 1/16W 22K-JB
R082	0700032M	CF 1/16W 220-JB	R308	0700049M	CF 1/16W 4.7K-JB
R083	0700041M	CF 1/16W 1.0K-JB	R309	0700065M	CF 1/16W 68K-JB
R084	0700041M	CF 1/16W 1.0K-JB	R310	0700049M	CF 1/16W 4.7K-JB
R085	0700041M	CF 1/16W 1.0K-JB	R311	0700061M	CF 1/16W 33K-JB
R086	0700041M	CF 1/16W 1.0K-JB	R312	0700029M	CF 1/16W 150-JB
R087	0700041M	CF 1/16W 1.0K-JB	R313	0700046M	CF 1/16W 2.7K-JB
R088	0700041M	CF 1/16W 1.0K-JB	R314	0700054M	CF 1/16W 10K-JB
R089	0700027M	CF 1/16W 100-JB	R315	0700065M	CF 1/16W 68K-JB
R090	0700041M	CF 1/16W 1.0K-JB	R316	0700067M	CF 1/16W 100K-JB
R094	0700045M	CF 1/16W 2.2K-JB	R317	0700064M	CF 1/16W 56K-JB
R095	0700054M	CF 1/16W 10K-JB	R318	0700058M	CF 1/16W 22K-JB
R097	0700054M	CF 1/16W 10K-JB	R322	0700065M	CF 1/16W 68K-JB
R098	0700054M	CF 1/16W 10K-JB	R323	0700052M	CF 1/16W 6.8K-JB
R099	0700041M	CF 1/16W 1.0K-JB	R324	0700046M	CF 1/16W 2.7K-JB
R101	0700039M	CF 1/16W 820-JB	R325	0187080M	CF 1/16W 4.3K-JB

REPLACEMENT PARTS LIST

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
R326	0700054M	CF 1/16W 10K-JB	R425	0700054M	CF 1/16W 10K-JB
R327	0700054M	CF 1/16W 10K-JB	R5E2	0700056M	CF 1/16W 15K-JB
R328	0700066M	CF 1/16W 82K-JB	R5E3	0114131M	CF 1/4W 100-JB
R329	0700067M	CF 1/16W 100K-JB	R5E4	0700054M	CF 1/16W 10K-JB
R330	0700058M	CF 1/16W 22K-JB	R5E5	0700027M	CF 1/16W 100-JB
R332	0700048M	CF 1/16W 3.9K-JB	R5E6	0700038M	CF 1/16W 680-JB
R333	0700034M	CF 1/16W 330-JB	R5E7	0700032M	CF 1/16W 220-JB
R334	0700054M	CF 1/16W 10K-JB	R5E9	0700056M	CF 1/16W 15K-JB
R335	0700034M	CF 1/16W 330-JB	R5F1	0700055M	CF 1/16W 12K-JB
R336	0700034M	CF 1/16W 330-JB	R5F2	0700027M	CF 1/16W 100-JB
R337	0700027M	CF 1/16W 100-JB	R5F3	0700027M	CF 1/16W 100-JB
R338	0700051M	CF 1/16W 5.6K-JB	R5F4	0700053M	CF 1/16W 8.2K-JB
R339	0150113	VR RV6 5K-JB	R5F5	0700057M	CF 1/16W 18K-JB
R340	0700041M	CF 1/16W 1.0K-JB	R5F6	0700041M	CF 1/16W 1.0K-JB
R341	0700039M	CF 1/16W 820-JB	R5F7	0119691M	MF 1W 0.33JB
R342	0700033M	CF 1/16W 270-JB	R5F8	0119691M	MF 1W 0.33JB
R343	0700047M	CF 1/16W 3.3K-JB	R5F9	0119691M	MF 1W 0.33JB
R344	0700041M	CF 1/16W 1.0K-JB	R5G1	0700049M	CF 1/16W 4.7K-JB
R345	0100125M	CF 1/8W 330K-JB	R502	0100037M	CF 1/8W 68-JB
R346	0700041M	CF 1/16W 1.0K-JB	R503	0100049M	CF 1/8W 220-JB
R347	0700062M	CF 1/16W 39K-JB	R504	0100049M	CF 1/8W 220-JB
R348	0100051M	CF 1/8W 270-JB	R505	0100049M	CF 1/8W 220-JB
R349	0700037M	CF 1/16W 560-JB	R506	0100041M	CF 1/8W 100-JB
R350	0114135M	CF 1/4W 150-JB	R507	0187086M	CF 1/16W 7.5K-JB
R360	0700033M	CF 1/16W 270-JB	R508	0700054M	CF 1/16W 10K-JB
R361	0700061M	CF 1/16W 33K-JB	R510	0700041M	CF 1/16W 1.0K-JB
R362	0700029M	CF 1/16W 150-JB	R511	0100129M	CF 1/8W 470K-JB
R363	0700049M	CF 1/16W 4.7K-JB	R512	0700065M	CF 1/16W 68K-JB
R364	0700051M	CF 1/16W 5.6K-JB	R513	0700061M	CF 1/16W 33K-JB
R365	0700064M	CF 1/16W 56K-JB	R514	0700067M	CF 1/16W 100K-JB
R366	0100133M	CF 1/8W 680K-JB	R515	0700054M	CF 1/16W 10K-JB
R370	0700052M	CF 1/16W 6.8K-JB	R516	0700054M	CF 1/16W 10K-JB
R371	0700049M	CF 1/16W 4.7K-JB	R517	0700054M	CF 1/16W 10K-JB
R372	0700046M	CF 1/16W 2.7K-JB	R518	0700067M	CF 1/16W 100K-JB
R373	0700049M	CF 1/16W 4.7K-JB	R519	0700065M	CF 1/16W 68K-JB
R374	0700048M	CF 1/16W 3.9K-JB	R520	0700067M	CF 1/16W 100K-JB
R375	0700048M	CF 1/16W 3.9K-JB	R521	0700059M	CF 1/16W 27K-JB
R376	0700041M	CF 1/16W 1.0K-JB	R522	0700054M	CF 1/16W 10K-JB
R377	0179536M	MG 1M J TAPE	R523	0700054M	CF 1/16W 10K-JB
R378	0700054M	CF 1/16W 10K-JB	R524	0700047M	CF 1/16W 3.3K-JB
R379	0700052M	CF 1/16W 6.8K-JB	R525	0700061M	CF 1/16W 33K-JB
R380	0700067M	CF 1/16W 100K-JB	R526	0700046M	CF 1/16W 2.7K-JB
R381	0100119M	CF 1/8W 180K-JB	R527	0700049M	CF 1/16W 4.7K-JB
R382	0700042M	CF 1/16W 1.2K-JB	R528	0700054M	CF 1/16W 10K-JB
R401	0700054M	CF 1/16W 10K-JB	R529	0700054M	CF 1/16W 10K-JB
R402	0700041M	CF 1/16W 1.0K-JB	R530	0700029M	CF 1/16W 150-JB
R404	0700041M	CF 1/16W 1.0K-JB	R531	0700054M	CF 1/16W 10K-JB
R405	0700045M	CF 1/16W 2.2K-JB	R537	0700041M	CF 1/16W 1.0K-JB
R406	0700045M	CF 1/16W 2.2K-JB	R538	0700041M	CF 1/16W 1.0K-JB
R407	0700045M	CF 1/16W 2.2K-JB	R539	0700041M	CF 1/16W 1.0K-JB
R408	0700045M	CF 1/16W 2.2K-JB	R540	0700041M	CF 1/16W 1.0K-JB
R411	0700063M	CF 1/16W 47K-JB	R541	0700041M	CF 1/16W 1.0K-JB
R412	0700063M	CF 1/16W 47K-JB	R542	0700041M	CF 1/16W 1.0K-JB
R413	0700067M	CF 1/16W 100K-JB	R543	0700041M	CF 1/16W 1.0K-JB
R414	0700036M	CF 1/16W 470-JB	R544	0700041M	CF 1/16W 1.0K-JB
R415	0700041M	CF 1/16W 1.0K-JB	R545	0700041M	CF 1/16W 1.0K-JB
R416	0700058M	CF 1/16W 22K-JB	R546	0100047M	CF 1/8W 180-JB
R417	0119505G	MF 2.2-J	R547	0700041M	CF 1/16W 1.0K-JB
R418	0119505G	MF 2.2-J	R548	0700041M	CF 1/16W 1.0K-JB
R419	0700065M	CF 1/16W 68K-JB	R549	0700041M	CF 1/16W 1.0K-JB
R420	0700065M	CF 1/16W 68K-JB	R550	0700027M	CF 1/16W 100-JB
R421	0114161M	CF 1/4W 1K-JB	R551	0700032M	CF 1/16W 220-JB
R422	0114161M	CF 1/4W 1K-JB	R555	0700032M	CF 1/16W 220-JB
R423	0700065M	CF 1/16W 68K-JB	R556	0700032M	CF 1/16W 220-JB

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NOTES

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
EF96	2721351	FUSE HOLDER	N730	4159427	3X10 SCREW WITH WASHER STEEL
EPP	2973631	3P CONNECTOR	N801	3763751	SK BINDER
ESL	2993567	CONN. W/WIRE MINI 5J (L1500) W/FASTON	PB	2661756	1P PLUG PIN WITH BASE
ESR	2993557	CONN. W/WIRE MINI 4J (L1500) W/FASTON	PCB	ED00512	CP-TAC-L15P-A1
ETU1	2979174	PLUG WITH COAXIAL CABLE	PCC	ED00516	CP-TAC-L20P-A1
ETU2	2979172	MINI PLUG WITH COAXIAL CABLE	PCD	ED00516	CP-TAC-L20P-A1
EVMC	EF04061	C0-03C-C2R5-651(CYR)	PCG	2903544	4P PLUG PIN WITH BASE
EY1	2908824	8J CONNE.L=750	PCR	2903544	4P PLUG PIN WITH BASE
EY2	2973744S	4J CONNE. L=750	PCX	ED00512	CP-TAC-L15P-A1
E107	2958351	CONN. W/WIRE MINI 2J	PDC	2959058	PINPOST 9P PH
E10	2776542	MAG-VM(C-C)NON6P	PDD	2959053	5P POST PIN 4P TYPE PH
E11	3811322	DY INSULATOR	PDG	2959059	PLUG PH PIN POST 10P
Δ E12	BY00501	DY-V80-6.7SS(3.00)M	PDH	2959054	PINPOST 5P PH
E301	HL00227	REMOTE CONTROL CLU-417UI	PFJ	2902246	PLUG PIN SUB MINI 7P
Δ E801	2698671	CPT SOCKET	PFT	2666191	4P PLUG PIN WITH BASE
Δ E831	2698671	CPT SOCKET	PI1	2663821	2P SUB MINI PLUG PIN
Δ E861	2698671	CPT SOCKET	PL	2903545	5P PLUG PIN WITH BASE
E9BN	4520883	3x12 SCREW WITH WASHER	PMB	2665272	4P PLUG PIN WITH BASE
E9DN	4520883	3x12 SCREW WITH WASHER	PMG	2665272	4P PLUG PIN WITH BASE
E9DW	4269926	WASHER	PMR	2665272	4P PLUG PIN WITH BASE
E9IN	4520883	3x12 SCREW WITH WASHER	PP	2661752	3P PLUG PIN WITH BASE
E9IS	KL00051	IC SPRING	PP31	2661751	PLUG PIN WITH BASE
Δ E901	2972841	AC POWER CORD (FILTER IN)	PR	2903544	4P PLUG PIN WITH BASE
E902	3772201	AC CORD HOLDER NYLON	PSD1	2674631	5P PLUG PIN
E903	3739671	CORD HOLDER	PSD2	2674631	5P PLUG PIN
E904	2782611	CENTER PIN	PSD3	2674634	8P PLUG PIN
Δ GF01	CJ00071R	SPARK GAP	PSD4	2674635	10P PLUG PIN
Δ G701	CJ00071R	SPARK GAP	PSD5	2674636	12P FJ CONNECTOR (TYPE 12PL-FJ)
Δ G801	CJ00071R	SPARK GAP	PSD6	2674631	5P PLUG PIN
Δ G802	CJ00071R	SPARK GAP	PSU1	ED00576	CP-TAC-L20X-A1
Δ G831	CJ00071R	SPARK GAP	PVMC	2902262	PLUG PIN SUB MINI 3P
Δ G832	CJ00071R	SPARK GAP	PVM1	ED00566	CP-TAC-L10X-A1
Δ G861	CJ00071R	SPARK GAP	PVM2	ED00566	CP-TAC-L10X-A1
Δ G862	CJ00071R	SPARK GAP	PY1	2675287	PLUG PIN (PH 8P)
JY01	ES00001	13P JACK WITH S TERMINALJACK	PY2	2902263	PLUG PIN SUB MINI 4P
JZ01	ER00121	2L4P LEVER TERMINAL	P802	2661756	1P PLUG PIN WITH BASE
NE02	4520883	3*12 SCREW WITH WASHER	P832	2661756	1P PLUG PIN WITH BASE
NFP2	3763751	SK BINDER	P862	2661756	1P PLUG PIN WITH BASE
NF02	4520883	3*12 SCREW WITH WASHER	Δ U401	2412921	SPEAKER (L)
NK03	4520883	3*12 SCREW WITH WASHER	Δ U402	2412921	SPEAKER (R)
NK06	4520885	3*16 SCREW WITH WASHER	V1B	DE01083	CRT 180DLB22 (B)
NK07	4518772	SCREW3X12TAPPINGWITHWSR STEEL	V1G	DE01082	CRT 180DLB22 (G)
NK08	4105241	CONV.IC SUPPORT BK	V1R	DE01081	CRT 180DLB22 (R)
NK11	4520883	3*12 SCREW WITH WASHER	XX01	2791501	CRYSTAL HC-49/U
NPF2	3763751	SK BINDER	XX02	BJ00141	COIL (LC FILTER) 3.58MHZ
N003	3700342	WIRE CLAMP V0	XX03	BJ00112	COIL (LC FILTER) 6MHZ
N004	3876031	WIRE CLAMP W 13-20 PA	X001	2168831	CRYSTAL CSA12.0MTZ
N005	3728273	PURSE LOCK (8)	X5A1	2794401	DELAY LINE GLASS 63.5US=
N006	3785502	V LOCK 11.5	X301	2786685	CRYSTAL CSB500F25
N007	3785511	V LOCK 16	X501	2791501	CRYSTAL HC-49/U
N101	3443353	SHIELD CASE		H310354	DIGITAL CONV. JIG SCREEN (50")
N102	3443361	SHIELD PLATE		H310356	DIGITAL CONV. JIG SCREEN (55")
N153	H810221	PRT SCREW		UE02541	LENS CRT CHASSIS B. ASS'Y (50FX18B/19K)
N155	H830091	CRT SPRING		UE02542	LENS CRT CHASSIS B. ASS'Y (55FX20B)
N201	QR07361	AP62 INSTRUCTION BOOK (E)			
N402	4520883	3*12 SCREW WITH WASHER			
N406	3335321	GROUNDING SPRING			
N408	3332021	GX EARTH SPRING STEEL			
N502	4520883	3*12 SCREW WITH WASHER			
N505	3617451	HC SP LENS COVER			
N602	4520883	3*12 SCREW WITH WASHER			
N604	4520883	3*12 SCREW WITH WASHER			
N702	4520883	3*12 SCREW WITH WASHER			
N704	4159425	3X16 TAPPING WITH WASHER			

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